



Evaluation of an Open Distance Learning Device Based on SPOCs Model for Future Teachers of Physical Education and Sport

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Abstract: The aim of this study is to assess the satisfaction of physical education and sports' trainee teachers of an open distance training on small private online course's model which aims to develop professional skills for 70 future teachers through a questionnaire administered at the end of training to our two groups : hybrid and distanced. We used descriptive and inferential t-test statistics for equality of means and z-test of Comparisons of column proportions to examine the effect of the following independent variables: participants' motivational factors, difficulties encountered benefits and prospects of these ODL-SPOCs on groups' type formed at a threshold of $p < 0.05$. Results reveal a great motivation of trainee teachers to follow this training, as 70% of participants did not find any technical difficulty relating to MOODLE platform's use. Likewise, the objective of these ODL-SPOCs has been reached with 100% of trainees having an average score above 13/20 and more than 80% of participants confirmed their pre-availability to relive this distance training experience and institutionalize it in training centers for future teachers in Morocco. The positive and encouraging results of our study serve as an important reference for university managers and teacher-trainers on the integration of ODL-SPOCs into professional training's curriculum of future teachers.

Keywords: Assessment; ODL; SPOC; Trainee teachers; Physical Education and sport

1. Introduction

The beginning of the 21st century saw enormous evolution, change and innovation in higher education and teacher training sector, as education functions in the service of economy, politics, education sector, health, socio-cultural sphere, or other internal segments of the education sector.^[1] Overall, education has a threefold purpose: to preserve culture through the knowledge transmission, to adapt young people for societal needs, and to transform society. L. Ria (2015)^[2] recalls that "Teacher training is a topical subject at the international level to better prepare future teachers for a profession undergoing profound change but also more broadly in order to improve education systems' quality". By fitting into this universal perspective, the training of teachers in Morocco since 2012, through Regional Centers for Education and Training Professions (RCETP) adopted an initial qualifying and professional training based on the professionalization of teaching profession and on a competency-based entry method^[3] promoting professional skills' development linked to teaching. Moreover, with the advancement and improvement of technology, higher education has become accessible to millions of individuals (Pope, 2013).^[4] This availability and flexibility of e-learning has been one of the biggest influences that have recently shaped higher education (Kentor, 2015).^[5] Likewise,

and beyond the promise of online education to provide equitable learning while expanding access to education for diverse student populations -all at a presumed lower cost-. Supporters of expanding e-learning in higher education highlight its possibilities: to deliver education that simultaneously supports alternative learning styles, while providing experiences that are not otherwise possible in the classroom traditional (Alexander and Sonalini, 2013; McNatt, 2019; Plohn, 2014; Warner, 2016).^[6-9] However, critics of online learning question whether technology-based learning styles can deliver on their promise of meeting the needs of non-traditional learners and providing better student learning than traditional education (Bonvillian and Singer, 2013; Demirci, 2014; Keramidias, 2012; Wildavksy, 2013).^[10-13]

In this regard, in Morocco, the strategic vision of the 2015-2030 reform continues to proclaim a capital importance to ICT's integration for the development and promotion of digital-based education and training through the implementation of adapted, scalable, open and innovative systems. Adhering to this vision, we have designed at the Regional Center for Education and Training Professions (RCETP) Casablanca-Settat an Open Distance Learning (ODL) system based on Small Private Online Courses (SPOCs) that we called « FP@STAPS » intended for teacher-trainees of Physical and Education Sport (PES) to complete their initial face-to-face training and to develop their professional teaching skills.^[14] The instructional

design of this device is referred to the ADDIE model of training engineering (Analysis-Design-Development-Implementation and Evaluation).^[15] In this engineering, evaluation is an essential key to verify effectiveness and quality of this distance training system. To this end, although research studies focused on determining the quality of distance learning experiences have made important contributions to the literature, concerns about relative quality of online courses persist (Allen & Seaman, 2014).^[16] In this same vein, there are a myriad of evaluation models and quality standards that can be applied to the evaluation of distance education programs. These attempts to define quality illustrate the absence of a definitive quality assurance process that can be approved by all (Kidney, Cummings & Boehm, 2007).^[17] This is because evaluation is a real task for each institution. According to the literature, there are many different approaches to assessing the quality of distance education since "Assessment as a practice shamelessly borrows from all disciplines and ways of thinking to capture both facts and values" (Mathison, 2007).^[18] In addition, higher education institutions have been conducting internal assessments through student assessments for almost a hundred years (Anderson, Cain, & Bird, 2005; Lowenthal, Bauer & Chen, 2015).^[19-20] Over time, these evaluations have been used by administrators to regulate the effectiveness of teaching (Kogan, 2014),^[21] and now constitute one of the longest lines of ongoing research examining the validity of this evaluation process (Lowenthal et al., 2015).^[20] However, student assessments can provide an arsenal of information about learners' experiences in higher education (Lowenthal et al., 2015)^[20] and they could be used to assess the overall quality of educational courses or programs. According to Frydenberg (2002)^[22] and Jung (2011),^[23] most of the assessment models and quality standards that exist in the field have been developed from a distance training provider perspective (i.e., program administrators, professionals). Although the contributions of distance education providers are valuable in assessing the quality of distance education, it is essential to understand learners' perspective, since the learner is a key stakeholder in any type of educational experience (Andrews & Tynan, 2012; Jung, 2011).^[23-24] In this perspective, there is a need to study students' opinion in distance education in order to rationalize the design, implementation and evaluation of any distance training device likely to overcome the inherent limitations of distance education. The evaluation of the expectations, socio-technological profiles and perceptions of learners can be indicators of the quality of the ODL-SPOC systems. In this context, our study tries to advance research in the axis of distance training's evaluation by focusing on participants' satisfaction towards our ODL-SPOCs device. The main objective of our study is to assess the techno-pedagogical effectiveness of our distance training session through learners' satisfaction of training quality. The sub-objectives are:

- Identify the socio-technological characteristics of the trainee teachers participating in our ODL-SPOCs.
- Determine motivational and judgment factors of our ODL-SPOCs' participants
- Distinguish some difficulties encountered by participants during these ODL-SPOCs.

- Collect the benefits drawn from these ODL-SPOCs in quantitative terms (average marks obtained) and qualitatively (participants' satisfaction).
- Identify the perspectives of trainee teachers following their participation in our ODL-SPOCs.

2. Methods

2.1. Sample

Our sample consists of 70 trainee teachers, including 19 female students in vocational training, all of them in vocational training at Regional Center of Educational and Training Professions Casablanca - Settat, during the period 2018/2019 of Physical and Sports Education (EPS) intended for teaching at middle and qualifying school level. It is divided into two groups:

- ✓ A group with hybrid training: formed by 43 trainee teachers (61%) that we called hybrid in reference to its ODL's form. They undergo a double initial training: face-to-face at the RCETP and online training through our ODL-SPOCs device called "FP@STAPS" which we hosted in a MOODLE Version 3.2 platform, a course management system used to create and distribute dynamic interactive online courses.^[46]
- ✓ A distanced training group formed by 27 trainee teachers (39%) from the 2017 training promotion who practice their profession and follow a face-to-face training at the RCETP spread over four weeks of reception, training and evaluation.

2.2. Measurement instruments

In the present study, we administered a questionnaire to the two groups of our sample: hybrid and distanced. This questionnaire is closed or structured so that the respondents choose the answer among various options according to their characteristics (Sudaryono & Rahayu, 2013; Ramadhan, et al. 2019).^[25,26]

The questionnaire is organized into these four sections:

- ✓ Sociological and technological profile of the participants;
- ✓ Motivation of trainee teachers to follow an ODL-SPOCs;
- ✓ Difficulties encountered and degree of satisfaction with ODL-SPOCs;
- ✓ Benefits from these FOAD-SPOCs. These sections are composed of closed questions of dichotomous type and multiple choices.

2.3. Data analysis

The data are analyzed by ANOVA I, Chi-square test (Khi2 value, df, p) by comparing the frequencies of the variables, we examined the effect of the above evaluation's parameters and their dependence on the type of ODL-SPOCs received: hybrid or distanced, at the threshold of $p < 0.05$. Inferential statistics of t-test for equality of means and z-test of Comparisons of column proportions were applied to test the stated hypotheses and the data were processed with SPSS 26 software.

Table 1. Socio-technological characteristics of participants in ODL-SPOCs

		N	%
Gender	Female	19	27,1%
	Male	51	72,9%
Age	20 to 24 years old	40	57,1%
	25 years and over	30	42,9%
Initial training in TSPAS	initial training	23	32,9%
	Initial training in TSPAS	47	67,1%
Internet connection at home	Not connected	9	12,9%
	Connected to the internet	61	87,1%
Previous ODL experience	No	48	68,6%
	Yes	22	31,4%
Total		70	100,0%

Table 2. Reasons for choosing our ODL-SPOCs system

		Type of training				Comparison of column proportions test (z test)	
		Hybrid		Distanced		Hybrid	Distanced
		N	%	N	%	(A)	(B)
Reasons for choosing the ODL-SPOCs (5 reasons)	Personal development	14	20,0%	2	2,9%	B(0.015)	
	Response to the teacher	8	11,4%	0	0,0%		.a
	Career progression	6	8,6%	1	1,4%		
	Preparation for the exam	0	0,0%	6	8,6%	.a	
	Mixed	15	21,4%	18	25,7%		A(0.010)

Table 3. SPOC judgment factors at the end of training

		Training group						Chi-square test		
		Hybrid		Distanced		Total		value	df	p
		N	(%)	N	(%)	N	(%)			
SPOC is easier than a face-to-face course at RCETP	Unsatisfactory	23	32,9%	9	12,9%	32	45,7%	2.715	1	0.099
	Satisfactory	20	28,6%	18	25,7%	38	54,3%			
The SPOC allows individualized monitoring and teaching	Unsatisfactory	14	20,0%	8	11,4%	22	31,4%	0.066	1	0.797
	Satisfactory	29	41,4%	19	27,1%	48	68,6%			
SPOC reduces travel time for participants	Unsatisfactory	9	12,9%	1	1,4%	10	14,3%	4.020	1	0.045
	Satisfactory	34	48,6%	26	37,1%	60	85,7%			
In a face-to-face course, I am more often in contact with other learners compared to a SPOC	Unsatisfactory	17	24,3%	7	10,0%	24	34,3%	1.363	1	0.243
	Satisfactory	26	37,1%	20	28,6%	46	65,7%			
The face-to-face course at RCETP is more prestigious than a SPOC	Unsatisfactory	27	38,6%	16	22,9%	43	61,4%	0.087	1	0.768

3. Results

3.1. Characteristics of participants

From Table 1, we see that our sample is mainly made up of men (72.9%). In addition, 67.1% of the participants had received initial training in the technical sciences of physical activities and sports (TSPAS). We also noticed that almost all respondents have internet access (87.1%). For previous participation in ODL, we noted that 68.6% of participants had no ODL experience.

3.2. Motivational factors towards the ODL-SPOCs system

The results of Table 2 show the variation in factors which motivated trainee teachers to choose participation in our distance training with the type of training received: hybrid or distanced learning. Indeed, we find that the "mixed" reason has higher scores than the other reasons with a respondents' percentage of 21.4% hybrid and 25.7% for distanced. Follow-ups of the "personal development" reason with 20.0% of respondents who received our hybrid FOAD-SPOCs and 2.9% of distanced respondents. The reason "preparation for the exam" was not chosen by hybrid respondents (0.0%) and only 8.6%

of distanced one who reported it. However, results of comparisons the columns' proportions z-test show that there are statistically significant differences between two reasons for choosing ODL-SPOCs: "personal development" and "mixed" and training's type received by hybrid and distanced trainee-teachers ($p < 0.05$).

3.3. Satisfaction of trainee teachers with regard to ODL-SPOCs

The results in Table 3 show participants' satisfaction with the SPOCs received in their ODL-SPOCs while judging them and comparing them with face-to-face courses at the RCETP. 85.7% of respondents agree with the idea that "SPOC decreases the travel time of participants" with 48.6% of hybrid participants and 37.1% of distances ones. In addition, 68.6% of respondents are for "SPOC allows individualized monitoring and education" with 41.4% of hybrids and 27.1% of distanced. Moreover, ANOVA test's results in Table 3 showed a statistically significant relationship of dependence between the variable "SPOC decreases the travel time of participants" and the type of training received by trainee teachers: hybrid and distanced ($p < 0.05$).

Table 4. Technical difficulties related to the use of ODL-SPOCs

		Type of Training						Chi-square test		
		Hybrid		Distanced		Total		value	df	p
		N	(%)	N	(%)	N	(%)			
Are there any technical difficulties related to the use of the platform?	No difficulty	27	38,6%	23	32,9%	50	71,4%	4.076	1	0.044
	Presence of difficulties	16	22,9%	4	5,7%	20	28,6%			
If so, what is the nature of these technical problems?	Internet connection not available	7	31,8%	0	0,0%	7	31,8%	22.000	6	0.001
	Use and operation of the platform used	4	18,2%	0	0,0%	4	18,2%			
	Computer equipment and material	2	9,1%	0	0,0%	2	9,1%			
	Lack of a resource person for technological support	2	9,1%	0	0,0%	2	9,1%			
	Resource person for socio-emotional, cognitive and thinking aid	1	4,5%	0	0,0%	1	4,5%			
	Mixed	0	0,0%	2	9,1%	2	9,1%			
Other	0	0,0%	4	18,2%	4	18,2%				

Table 5. Rating of Course I and training groups

	Training group	N	Mean	Std. Deviation	Std. Error Mean
Grades of training course I	Distanced	23	14.0870	3.81281	0.79503
	Hybrid	44	16.9318	2.92064	0.44030

Table 6. Independent samples test: Average scores of course I and training groups

Training group	Levene's Test for Equality of Variances		T-test for Equality of Means					95% Confidence Interval of the Difference	
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	0.960	0.331	-3.402	65	0.001	-2.84486	0.83628	-4.51502	-1.17470
Equal variances not assumed			-3.130	35.840	0.003	-2.84486	0.90881	-4.68830	-1.00143

3.4. Difficulties encountered by trainee teachers during these ODL-SPOCs

The results appearing in table 4 show that 71.4% of trainee teachers participating in the ODL-SPOCs did not find any technical difficulty relating to the MOODLE platform's use, with a percentage of 38.6% for hybrid participants and 32.9% distanced ones. In parallel to this result, 28.6% of respondents affirmed the presence of technical difficulties. These difficulties are mainly linked to unavailability of internet connection (31.8%). 18.2% of these respondents have other difficulties and only 4.5% of respondents need a resource person for socio-emotional, cognitive and thinking aid. However, results of ANOVA test in Table 4 shows the existence of a statistically significant dependence between the variables "no difficulty", "the nature of these technical problems" and the type of training received by teachers ($p < 0.05$).

4. The benefits drawn from these ODL-SPOCs

The benefits derived from our ODL-SPOCs system revolve around two axes:

4.1. Professional skills acquired by trainee teachers

This part includes the various quantitative results collected from formative tests in the form of online multiple choice questions via the platform of two training groups: distanced and hybrid. Based on the analysis and processing of these results, the researcher makes possible technopedagogical adjustments and regulations in order to discount the educational objectives set in advance.

4.1.1. Training course I: "Reinforcement of basic skills in Athletics"

Table 5 presents a comparison of average scores for the first training course entitled "Reinforcement of basic achievements in Athletics". The results show that the scores obtained are significantly high by 19.25% $[(16.93 - 14.08) / 14.08] * 100$ among trainee teachers involved in hybrid training compared to those in the perspective distance training 16.93 ± 2.92 vs. 14.08 ± 3.81 ($F = 0.960$, $p = 0.331$, $t = -3.402$). However, the results of t-test (Table 6) show that there are statistically significant differences between the average score obtained and the training group (p -value $0.001 < 0.05$).

4.1.2. Training course II:

"Professional skills for teaching PES" The results of the comparison of the average scores for our second training course entitled "Professional skills for teaching EPS" are presented consecutively in tables 7 and 8 for the planning learning's chapter; 9 and 10 for learning management; 11 and 12 for learning's evaluation.

4.1.2.1. Learning Planning chapter

Table 7 presents a comparison of average scores for Learning Planning chapter in our second training course entitled "Professional skills for teaching PES". Results show that obtained scores are relatively high at 5.56% $[(16.68 - 15.80) / 15.80] * 100$ among trainee teachers involved in hybrid training compared to those of distanced one perspective 16.68 ± 3.32 vs. 15.80 ± 4.30 ($F = 0.000$, $p = 0.992$, $t = -1.026$). Furthermore, t-test results (Table 8) show that there are no statistically significant differences between the obtained marks' average and training groups (p -value $0.308 > 0.05$).

Table 7. Scoring of learning planning chapter and training groups

	Training group	N	Mean	Std. Deviation	Std. Error Mean
Marks of Learning planning chapter	Distanced	31	15.8065	4.30054	0.77240
	Hybrid	50	16.6800	3.32240	0.46986

Table 8. Independent samples test: Average scores of learning planning chapter and training groups

Training group	Levene's Test for Equality of Variances		T-test for Equality of Means					95% Confidence Interval of the Difference	
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	0.000	0.992	-1.026	79	0.308	-0.87355	0.85136	-2.56814	0.82104
Equal variances not assumed			-0.966	51.955	0.338	-0.87355	0.90408	-2.68776	0.94067

Table 9. Scoring of learning management chapter and training groups

	Training group	N	Mean	Std. Deviation	Std. Error Mean
Grades of Learning management chapter	Distanced	29	12.0690	3.76004	0.69822
	Hybrid	44	15.6364	4.50886	0.67974

Table 10. Independent samples test: Average scores of management learning chapter and training groups

Training group	Levene's Test for Equality of Variances		T-test for Equality of Means					95% Confidence Interval of the Difference	
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	3.686	0.059	-3.526	71	0.001	-3.56740	1.01162	-5.58451	-1.55029
Equal variances not assumed			-3.661	67.023	0.000	-3.56740	0.97445	-5.51240	-1.62240

4.1.2.2. Learning management chapter

Table 9 presents a comparison of average scores for "Learning management" chapter in our second training course entitled "Professional skills for teaching PES". Results show that obtained scores are significantly high by 29.60% $[(15.63 - 12.06) / 12.06] * 100$ among trainee teachers involved in hybrid training compared to those of distanced one perspective 15.63 ± 4.50 vs. 12.06 ± 3.76 ($F = 3.686$, $p = 0.059$, $t = -3.526$). However, t-test results (Table 10) show that there are statistically significant differences between obtained marks' average and training groups (p -value $0.001 < 0.05$).

4.1.2.3. Learning evaluation chapter

Table 11 presents a comparison of average scores for learning evaluation chapter in our second training course entitled "Professional skills for teaching PES". Results show that the scores obtained are significantly high by 16.12% $[(14.62 - 12.59) / 12.59] * 100$ among trainee teachers involved in hybrid training compared to those of distanced one perspective 14.62 ± 5.48 vs. 12.59 ± 5.40 ($F = 0.068$, $p = 0.795$, $t = -1.459$). T-test results (Table 12) show that there are no statistically significant differences between marks' average and training groups (p -value $0.150 > 0.05$).

4.2. Evaluation of the ODL-SPOCs' benefits

This part is reserved for the evaluation of trainee teachers' satisfaction towards our distance training. Table 13 presents the benefits expressed by trainee teachers.

Indeed, in terms of training's usefulness, we find that almost all respondents (95.7%) affirmed that this online distance training is useful, with relatively higher scores for the hybrid group (58.6%) in comparison with distanced one (37.1%). Furthermore, results of

table 13 show that there are no statistically significant differences between training's usefulness and training group (p -value $0.849 > 0.05$). In terms of professional skills developed through these ODL-SPOCs, results show that all trainee teachers participating in this training declared that they had developed several professional skills at the same time with a percentage of 62.9%; while 17.1 % of respondents are for online learning; 8.6% of respondents for learning planning and only 4.3% for the professional competence of learning management. Nevertheless, results of table 13 show that there are no differences statistically significant between professional skills developed and training group: hybrid or distanced (p -value $0.204 > 0.05$).

- *Perspectives de la FOAD-SPOCs*

Les résultats du tableau 14 montre clairement que presque tous les professeurs stagiaires sont prédisposés à participer à des futures sessions de FOAD-SPOCs avec un pourcentage de 97,1%. En outre, 82,9% des répondants sont d'accord pour une institutionnalisation de ces SPOCs dans la formation de professeurs d'EPS au CRMEF du Maroc. Toutefois, les résultats du test ANOVA ne montre aucune différences significatives entre ces paramètres évalués et le groupe de formation hybride ou distancié ($p > 0.05$).

5. Discussion

The aim of our study is to assess technical and pedagogical effectiveness of an ODL-SPOCs device designed for trainee teachers in order to strengthen and develop their professional skills related to the teaching of PES. We verified the effect of training group: hybrid or distanced on the following parameters: participants' motivation

Table 11. Scoring of learning evaluation chapter and training groups

	Training group	N	Mean	Std. Deviation	Std. Error Mean
Grades of learning evaluation chapter	Distanced	27	12.5926	5.40128	1.03948
	Hybrid	35	14.6286	5.48305	0.92681

Table 12. Independent samples test: Average scores of learning evaluation chapter and training groups

Training group	Levene's Test for Equality of Variances		T-test for Equality of Means					95% Confidence Interval of the Difference	
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	0.068	0.795	-1.459	60	0.150	-2.03598	1.39540	-4.82719	0.75524
Equal variances not assumed			-1.462	56.476	0.149	-2.03598	1.39265	-4.82528	0.75332

Tableau 13. Bénéfices de la FOAD-SPOCs et groupes de formation

		Type of Training						Chi-square test		
		Hybrid		Distanced		Total		value	df	p
		N	(%)	N	(%)	N	(%)			
Training's usefulness	No use	2	2.9%	1	1.4%	3	4.3%	0.036	1	0.849
	Useful	41	58.6%	26	37.1%	67	95.7%			
	Learning planning	6	8.6%	0	0.0%	6	8.6%			
Professional skills developed during this ODL-SPOCs	Learning management	1	1.4%	2	2.9%	3	4.3%	5.938	4	0.204
	Students' assessment	4	5.7%	1	1.4%	5	7.1%			
	Online learning	7	10.0%	5	7.1%	12	17.1%			
	Mixed	25	35.7%	19	27.1%	44	62.9%			

Tableau 14. Avis des professeurs stagiaires sur les perspectives des FOAD-SPOCs au Maroc

		Groupe de formation						Test de Khi 2		
		Hybride		Distanciée		Total		Khi 2	dII	p
		N	(%)	N	(%)	N	(%)			
Prédisponibilité à participer à des sessions de FOAD prochainement	Refus	2	2,9%	0	0,0%	2	2,9%	1.293	1	0.256
	Prédisposé	41	58,6%	27	38,6%	68	97,1%			
Votre avis pour une institutionnalisation de ces SPOCs dans la formation de professeurs d'EPS au CRMEF du Maroc	Défavorable	5	7,1%	7	10,0%	12	17,1%	2.387	1	0.122
	Favorable	38	54,3%	20	28,6%	58	82,9%			

factors to follow this distance training, difficulties encountered and benefits drawn from these ODL-SPOCs. The results' discussion is focused on these three parameters:

➤ *Motivation of trainee teachers to follow this ODL-SPOC*

The obtained results showed that it is the "mixed" reason which motivated more the participants of our ODL-SPOCs; this can be interpreted by the great motivation of participants to follow this distance training, which would guarantee their success and academic performance. These findings are supported by the study of Selim (2007)^[27] who concluded that learner motivation has a critical role to play in the adoption of e-learning environments among students.

In addition, several studies have established a strong cause-and-effect relationship between learner motivation and achievement and engagement in online learning environments (Baturay & Yükseltürk, 2015; Cull et al., 2010).^[28,29] In addition, the most motivated learners spend more time in an online learning environment (Rosenberg and Ranellucci, 2017).^[30] In addition, the interaction profiles of online learners differ according to students learning's motivation (Şahin et al., 2017).^[31]

➤ *Satisfaction of trainee teachers towards the ODL-SPOCs*

The results shown in this axis of analysis clearly show the satisfaction of trainee teachers with respect to the contribution and advantages of courses in the form of SPOCs compared to face-to-face courses. More than two-thirds of participants are aware and in

agreement with the two major qualities of the SPOCs, namely the reduction in the travel time of the participants and also the follow-up and individualized teaching. These results affirm that the SPOCs can play an essential role in the reinforcement of courses or face-to-face training. Their advantages have been exposed by several previous studies. For (Santamaría, 2014),^[32] Sometimes SPOCs have been developed in academia, applying the educational resources used in MOOCs, as a training course for teaching staff. In addition, these courses can complement diploma courses (López, 2016; Wang, Wang, Wen, Wang, & Tao, 2016; Zhang et al., 2019; Zheng, C hu, Wu and Gou, 2018),^[33-36] or even strengthen the teaching of blended learning so that students can adapt their learning pace to the content and explanations of lessons (Lou, Zheng and Jiang, 2016).^[37]

➤ *The difficulties encountered by trainee teachers during this ODL-SPOCs*

The obtained results in this axis of analysis affirm that more than 70% of participants did not find any technical difficulty relating to MOODLE platform's use. Consequently we can deduce the ease technopedagogical of this platform's use. In this vein, Ansong et al. (2017)^[38] mentioned in their study that there are three aspects in the adoption and use of Moodle platform, namely technological factor, organizational factors, environmental factors and human factors. Likewise, human and social influence was another attribute (Ansong et al., 2017; Goyal & Tambe, 2015; Hsiao-hui Hsu & Chang, 2013; Kilic, 2014; Minović, et al. 2008)^[38-42] which was mentioned as having a positive or negative influence on the use and adoption of Moodle

in higher education institutions. Moreover, in these ODL-SPOCs, 28.6% of respondents encountered technical problems mainly related to the unavailability of the internet connection (31.8%) and other technical difficulties (18.2%). These results can be interpreted by the importance of internet broadband to provide this type of training, in addition to technical and technological support for the participants are likely to guarantee effective training conditions. From this perspective, and despite the success of online learning, it depends on the intensity by which the instructors use the technology. The instructors will prefer to use a user-friendly and easy technological system to use other than a hard-to-understand system (Adenuga et al., 2015).^[43] Similarly, Abdullah (2017)^[44] revealed that technical availability and technical support are the additional constructs / factors that influence attitudes and behavioral intentions to use Moodle platform in higher education institutions. In addition, the obtained results by ANOVA test show the existence of a significant dependency relationship between the parameter "no difficulty" and training group. This result can be interpreted by the ease use of MOODLE platform by distanced participants (5.7%) compared to hybrid ones (22.9%) given their increased need for distance training.

➤ *The benefits drawn from this ODL-SPOCs*

The results collected in this axis are subdivided into two quantitative and qualitative components. Quantitatively, the results of the professional skills' evaluation acquired by the trainee teachers showed that all trainee teachers in the two training courses received, obtained an average mark above 13/20, with an average score of 15.96 / 20 for those from hybrid group and 13.63 / 20 for those from the distanced group. These results confirm the objective's achievement of this ODL-SPOCs, which was the professional skills' development related to teaching in future teachers of PES. Moreover, t-test results (Table 4) showed the existence of statistically significant differences between the obtained marks' average and training group (p -value $0.001 < 0.05$) with a superiority of obtained scores by hybrid trainee teachers compared to distanced ones. These results show that blended learning is more effective compared to fully distance learning. This result is supported by (Deschacht and Goeman, 2015)^[45] who examined the effect of blended learning on learners' academic success adults and have found that blended learning improves exam results. In addition, results of previous studies Edward et al. (2018); Ghazal et al. (2018)^[46,47] reported that blended learning approach improves student engagement and learning experience, as it creates a significant influence on students' awareness of the mode of instruction and context of learning. Blended learning focuses on learning rather than teaching, thus allowing students to become more involved in the learning process and become more enthusiastic and, as a result, improves their perseverance and their commitment (Ismail et al. 2018).^[48]

Qualitatively, the results of the ODL-SPOCs benefits' evaluation showed that it was beneficial and interesting for almost all the participating trainee teachers, either hybrid or distanced. In addition, this distance training allowed developing among (62.9%) trainee teachers several professional skills at the same time. These found results are supported by several previous studies. Indeed, the

supporters of distance learning (Allen et al., 2004; Shachar & Neumann, 2003; Chivu, et al., 2018)^[49-51] claim that learning can be effective in the same way or even more effective than individual trainings. They claim that a teacher is unlikely to influence learning outcomes sufficiently, although the content of training materials, training methods, communication and student support are very important for students and can have an impact on its effectiveness. In the same vein, researchers (Markova et al., 2017)^[52] have identified that in general, students rate their distance learning experience positively; however, this type of online distance learning remains dependent on the interaction's conditions and motivation that the tutor-trainer will create with its trainees. In this sense, several factors can hinder the effectiveness of distance education, in this case, at the level of the learner: a lack of feedback or contact with the teacher and the control deficit (Pant, 2014).^[53] Also a lack of feedback or contact with a teacher worsens the effectiveness of the training since research results show that distance students perform worse than full-time students (Lane and Gregson, 2019).^[54] In addition, the lack of persistent motivation and ability to work effectively over time, and the feeling of isolation (Fojtik, 2018).^[55] At the teacher level: using the same teaching practices applied during full-time study (Fojtik, 2018).^[55]

➤ *Outlook for the ODL-SPOCs*

In this axis, we gathered the opinion of trainee teachers on their predisposition to participate in other distance training sessions such as our FOAD-SPOCs (more than 95% are for) and the institutionalization of this type of training. In the training of future PE teachers in Morocco (more than 82% are in favor). These results show the positive effect of this training on the development of professional skills and the satisfaction of these participants. Likewise, they confirm the predisposition of trainee teachers to be continuously trained through this type of training. These remarks are supported by previous studies which have mentioned the many advantages of distance education such as the guarantee of sustainability of education (Omiles et al., 2019; Akinbadewa and Sofowora, 2020; Seage & Türegün, 2020)^[56-58] and lifelong learning (Alharthi, 2020; Pambayun et al., 2019; Serhan, 2019).^[59-61] In addition, these results can be reinforced by a different perspective such as distance training during pandemic periods and especially COVID-19. A study by (Lall and Singh, 2020)^[62] assessed the outlook, attitudes and readiness of university students for distance education during the pandemic. The results showed that students had a positive attitude towards distance education through flexible learning opportunities. In their study, Xie and Yang (2020)^[63] examined students' home study experiences during the pandemic. The research introduced measures allowing students to study on their own and study independently during the pandemic

5. Conclusions

The objective of this study is to assess the satisfaction of trainee teachers with regard to ODL-SPOCs intended to strengthen and develop their professional skills related to the teaching of PES. The obtained results showed a great motivation of participants to follow

this training and a statistically significant relationship of dependence between the two reasons for choosing these ODL-SPOCs: "Personal development" and "mixed" and the training group. In addition, more than 85% of participants confirm the idea according to which "The SPOC decreases the travel time of the participants" with significant differences between this quality of the SPOCs and the training group. In addition, concerning the difficulties encountered by the trainee teachers during this training, we have noted that more than 70% of respondents did not find any technical difficulty relating to the use of MOODLE platform, which helped us Confirmed the techno-pedagogical ease of use of this platform and the possibility of its possible reuse in other online training. In the same perspective, the summative evaluation of our ODL-SPOCs reveals that in quantitative terms, all trainees' teachers with a hybrid and distanced profile have achieved the previously targeted objective of developing professional skills related to teaching PES with an average grade above 13/20. The benefits' evaluation of these ODL-SPOCs showed that it was useful and interesting for almost all the trainee teachers. And finally, we noted as perspectives of this ODL-SPOCs that more than 80% of participants confirmed their pre-availability to relive this experience of distance training, as they agree to institutionalize this type of training in vocational training centers for future PES teachers. Following these results, we recommend that teacher-trainers and administrators of vocational training establishments integrate distance training on the model of SPOCs into the initial and continuing training course of future teachers in order to further develop their professional teaching skills on the one hand and on the other hand to contribute practically in the quest for the integration of ICT in education and training in Morocco. In addition, our study presented some limitations relating to the short duration reserved for this ODL-SPOCs and the small sample which consisted of trainee teachers from a single vocational training center. Future research could focus on a sample wider and at the level of other training centers for future teachers in the kingdom to compare and draw new conclusions, and also to question the problem of integrating ODL into training curriculum for education and training professions in Morocco.

Conflicts of Interest

The authors declare no conflict of interest.

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