

PODIUM

Journal of Science and Technology in Physical Culture

Volume 19
Issue 3

2024

University of Pinar del Río "Hermanos Saíz Montes de Oca"



Original article

Instrument to measure digital skills in state managers and in sports entrepreneurship projects

Instrumento para medir competencias digitales en administrativos del Estado y en proyectos de emprendimiento deportivo

Instrumento para medir competências digitais em funcionários administrativos do Estado e em projetos de empreendedorismo desportivo

Tany Fernando Sánchez Bustamante ^{*1} , Manuel Edgardo Gamero Tinoco ^{*2} , Nelly Dioses Lescano ^{*3} , Víctor Genaro Rosales Urbano ^{*4} , Bardo Antonio Gamarra Quenaya ^{*5} 

¹ Cesar Vallejo University, Peru

² National University of Cajamarca

³ Lord of Sipán University

⁴ National University of San Marcos, Peru

⁵ San Ignacio de Loyola University

Corresponding author*: jillatasl@ucvvirtual.edu.pe

Received: 05/08/2024

Approved: 09/08/2024



ABSTRACT

Sports entrepreneurship projects and digital skills have proven to be crucial initiatives in current times, for the achievement of elite athletes and obtaining successful results at all competitive levels. However, on a global scale and particularly in Ecuador, there are lacks of methods and especially means, based on evaluating the impact of these projects. That is why the objective of this work was to propose a unified instrument to measure the digital skills of State managers and for sports entrepreneurship projects. To corroborate this perceived limitation in sports practices, an interview was applied to 30 managers, scientific observation was carried out, and its empirical feasibility was validated from a pre-experiment. To address the questions, the references of the digital skills framework for citizens were considered, to guarantee a global perspective. The results confirmed the effectiveness of the instrument to ensure a deeper objectivity when characterizing the sample and the sports preparation it receives. At the pre-test level, the averages for the study group and the control group were similar with a minimal difference of 0.07; at the post-test level, with a considerable difference of 5.13. In conclusion, the need to create a unifying instrument to enhance digital skills and sports entrepreneurship projects was demonstrated.

Keywords: managers, digital skills, sports entrepreneurship projects

RESUMEN

Los proyectos de emprendimiento deportivo y las competencias digitales han demostrado ser iniciativas cruciales en los tiempos actuales, para el logro de atletas de élite y obtener resultados exitosos en todo nivel competitivo. Sin embargo, a escala global y particularmente en el Ecuador existen carencias de métodos y sobre todo medios, en función de evaluar el impacto de estos proyectos. Es por ello, que el objetivo de este trabajo fue proponer un instrumento unificado para medir las competencias digitales de los administrativos del Estado y para proyectos de emprendimiento deportivo. Para corroborar esta limitación percibida en las prácticas deportivas, se aplicó una entrevista a 30 administradores, la observación científica y, se procedió a validar su factibilidad empírica desde un preexperimento. Para abordar las preguntas, se consideraron las referencias del



marco de competencias digitales para ciudadanos, para garantizar una perspectiva global. Los resultados corroboraron la efectividad del instrumento para asegurar una más profunda objetividad a la hora de caracterizar la muestra y la preparación deportiva que recibe, a nivel del pre-test los promedios para el grupo de estudio y el grupo control fueron semejantes con una mínima diferencia de 0.07; a nivel del post-test, con una diferencia considerable de 5.13. Como conclusión, se demostró la necesidad de crear un instrumento unificador para potenciar las competencias digitales y los proyectos de emprendimiento deportivo.

Palabras clave: administrativos, competencias digitales, proyectos de emprendimiento deportivo

RESUMO

Os projetos de empreendedorismo desportivo e as competições digitais têm-se revelado iniciativas cruciais nos tempos atuais, para a conquista de atletas de elite e obtenção de resultados de sucesso em todos os níveis competitivos. Contudo, à escala global e particularmente no Equador existem deficiências de métodos e, sobretudo, de meios para avaliar o impacto destes projectos. Por esse motivo, o objetivo deste trabalho foi propor um instrumento unificado para medir as competências digitais dos administradores do Estado e para projetos de empreendedorismo esportivo. Para corroborar essa limitação percebida nas práticas esportivas, foi aplicada entrevista a 30 administradores, observação científica e sua viabilidade empírica foi validada a partir de um pré-experimento. Para responder às questões, foram consideradas referências do quadro de competências digitais para os cidadãos, para garantir uma perspectiva global. Os resultados corroboraram a eficácia do instrumento em garantir maior objetividade na caracterização da amostra e da preparação esportiva que ela recebe. No nível pré-teste, as médias do grupo de estudo e do grupo controle foram semelhantes com uma diferença mínima de 0,07. ; no nível pós-teste, com uma diferença considerável de 5,13. Em conclusão, foi demonstrada a necessidade de criar um instrumento unificador para melhorar as competências digitais e os projetos de empreendedorismo desportivo.



Palabras-chave: competencias administrativas, digitales, proyectos de emprendedorismo deportivo

INTRODUCTION

Sports entrepreneurship projects and digital skills worldwide have proven to be crucial initiatives in current times for the achievement of elite athletes and for obtaining successful results at all competitive levels. According to Andrades et al. (2022), there is a relationship between physical activity, academic performance and executive functions in adolescents (football) for health well-being, which generates the following incidents:

- Relationship between physical activity, health and quality of life.
- Social impact of sports entrepreneurship.
- References to studies that support these claims.

Furthermore, digital skills and their importance as a consequence of information and communication technologies (ICT) have an impact on the workplace and business, as referenced by Arias (2021); García et al. (2021); Gonzales & Oseda (2021); Morales & Rodríguez (2020). This background provides arguments for analyzing the causes and consequences of the digital divide, as well as evaluating existing public policies to reduce it.

Sports entrepreneurship projects have caused positive and negative impacts on the work activities of society, especially from the use of ICT in the academic, educational and administrative sectors (Arias, 2021). On the positive side, in the 21st century, humanity has mastered the virtual world to offer the next job boost (Gonzales & Oseda, 2021). Likewise, there are digital gaps, because the population has not been digitally literate and the use of ICT has not been included in many of the study programs (Morales & Rodríguez, 2020).

Despite this shortcoming, digital media have penetrated all socioeconomic sectors (García et al., 2021) and have influenced the streamlining of administrative processes between the State and society; however, on a global scale and particularly in Ecuador, there have been



deficiencies in methods and, above all, means to evaluate the impact of these projects. That is why the objective of this work was to propose a unified instrument to measure the digital skills of State managers and to measure sports entrepreneurship projects.

MATERIALS AND METHODS

The research was developed with a quantitative approach, explanatory and comparative scope, with a quasi-experimental design; with a sample of 30 managers working in the National Police of Peru, all between the ages of 22 and 68, formed into two groups: a study group (SG) and a control group (CG), with 15 managers and approximately the same average age in each group.

The research was conducted for managers with homogeneous prior knowledge of digital skills and sports entrepreneurship projects. To select the sample, 33 managers were identified who were working from January to April 2024, but 30 managers were available to take part in the study.

To carry out the initial diagnosis, an interview was conducted with the managers and scientific observation was used to gather information on work with digital skills and sports entrepreneurship projects (object of study). After determining the weaknesses, an instrument was developed to unify the two areas of knowledge that were poorly attended to.

To verify the practical feasibility of this instrument, a pre-experiment (pre-test and post-test) was used, based on the following dimensions and indicators (see table 1)

Table 1. Dimensions for assessing the situation concerning digital skills and entrepreneurship projects.

	Test Items: Pre-test and Post-test	Always	Sometimes	Never
	Dimension 1. Information			
1.	Collection of information to teach sports entrepreneurship.			



2.	Information management to teach football entrepreneurship.			
3.	Digital content management to teach football entrepreneurship.			
4.	Evaluating digital content on information to teach entrepreneurship.			
	Dimension 2. Content creation			
5	Creation of content for football activities.			
6	Copyright and licenses managed by the institution on football.			
7	Anti-stress content about football, to preserve mental health.			
8	Creating football content for managers.			
	Dimension 3. Security			
1	Digital skills to understand data protection monitoring.			
2	Digital skills to preserve personal information of managers.			
3	Digital skills to protect devices by preserving managers' personal information.			
4	Digital skills to protect the mental health of managers.			
	Dimension 4. Communication			
5	Interaction through digital skills with citizens with online processes.			
6	Digital identity management through digital skills.			
7	Sharing information about digital skills through digital channels.			
8	Interactions, through technologies to teach digital skills.			

Impact of the implementation of a unified instrument

The creation of a unified instrument to measure these two dimensions brought with it multiple benefits:

- Improved digital skills: allowed to identify training needs and develop more effective training programs.
- Promoted sports entrepreneurship: facilitated the creation and evaluation of projects that promoted physical activity and employee well-being.



- Reduced stress and worry: regular exercise contributed to improving physical and mental health and reduced stress and anxiety.
- Increased productivity: healthier, more engaged employees were more productive and efficient.
- Strengthening the institutional image: the institution invested in the development of its employees and in promoting health, thereby projecting a positive image.

Approach to the proposal for a unified instrument

The unified instrument included the following components:

- Evaluation of digital skills.
- Basic computer knowledge.
- Skills to use productivity tools (office automation, email, and others).
- Ability to search and evaluate information on the Internet.
- Use of social networks and collaboration tools.
- Evaluation of sports entrepreneurship projects.
- Clear definition of project objectives.
- Planning and organizing activities.
- Resource management (human, material, economic).
- Impact of the project on the health and well-being of participants.

RESULTS AND DISCUSSION

Regarding the information of the initial diagnosis through the interview with the managers under study and the observation applied to the context in which they manage the professional processes, it was obtained that:

Police service personnel specializing in administration rotated annually through the different administrative areas and did not develop their digital skills in depth in a single system. Likewise, there was no professional specialization to develop digital skills in administrative systems. Lastly, they did not have in-depth knowledge of the regulations of



a single system, because the regulations in the state are modified or changed, as they are not static over time.

Likewise, in the Peruvian context, an exclusive and textual framework in digital skills or a study instrument was not found; only, "Electronic Government" was highlighted, said axis was related to the modernization of the State towards the bicentennial (Dill'Erva, 2021) . It was approved by Supreme Decree No. 004-2013-PCM, and in 2021, the General Government Policy for 2021-2026 was ratified, among one of its axes: Government and digital transformation, digital technology, digital citizenship, digital economy, electronic commerce, digital entrepreneurship, digital transformation, digital talent, among others, were highlighted (SUPREME DECREE No. 164-2021-PCM, 2021) .

In the scenario presented, a series of challenges were evident regarding the development of digital skills in the Peruvian public sector, particularly in the police field, such as staff turnover, lack of specialization and constant regulatory updating, which made it difficult to undertake sports projects.

Football, despite its popularity, often faces a series of challenges and shortcomings that limit its impact and reach, among the most obvious:

- Lack of adequate infrastructure: Many projects lack fields in optimal conditions, and have artificial or natural grass in poor condition, which affects the quality of training and matches.
- Additional facilities: lack of changing rooms, bathrooms, specific training areas and adequate rest areas.
- Economic limitations for playing football: difficulty in accessing financing for the acquisition of sports equipment (balls, cones, etc.), hiring qualified personnel (coaches), and organizing events.
- Donation dependency: Many projects rely on sporadic donations, which creates financial instability and makes long-term planning difficult.
- Lack of qualified personnel for the proper practice of football: shortage of coaches with specific training in grassroots football and talent development.



- Other professionals: lack of sports psychologists, nutritionists and physiotherapists who can provide comprehensive support to athletes.

Based on the motivation to create and validate a unifying instrument for these two fundamental areas of sports management in modernity (digital skills - entrepreneurship projects), the following were identified:

- Lack of comparability: without a common instrument it is difficult to compare levels of digital competence between different institutions or to evaluate the impact of sports entrepreneurship projects.
- Difficulty in decision-making: The absence of accurate and reliable data makes decision-making, promotion and performance evaluation difficult, which is practiced because administrative staff use a single instrument to arrange sports projects.
- Missed opportunities: areas for improvement cannot be clearly identified and opportunities offered by ICT and physical activity cannot be fully exploited

The absence of a unified instrument to evaluate both digital skills and sports entrepreneurship projects, especially in football, represented a significant gap, which generated sports inactivity as a consequence of the lack of sports projects, which was evident in the results of the pre-test.

Features of the unified measuring instrument in sport:

This instrument has been created to unite these two areas that sport needs for its development and success (specifically in the case of football). Achieving this instrument in optimal conditions improves the following conditions:

- Promotes sports participation: Sports entrepreneurship projects encourage active participation in physical activities; these promote healthy habits and more active lifestyles among the student population and public servants.
- Development of sports skills: Through the implementation of well-designed sports programs, the development of motor skills, coordination, strength, endurance and other physical abilities essential for general well-being is promoted.



- Team spirit and sporting values: sports entrepreneurship projects encourage teamwork, collaboration, respect, discipline and other fundamental values for personal and social development.
- Promoting inclusion and diversity: Inclusive sports projects provide opportunities for everyone to participate, regardless of their abilities or physical condition, promoting inclusion and diversity in the sports field.

As prior considerations for addressing the test questions, references from international frameworks such as the digital competences framework for citizens (DigComp) were considered, in order to guarantee a global perspective.

To measure the variable Sports Entrepreneurship Projects, the 4 items of each of the two dimensions of the DigComp 2.1 items were adapted to what was considered the information from the video (2016):

1. **Dimension 1:** Information
2. **Dimension 2:** Content Creation
3. **Dimension 3:** Security
4. **Dimension 4:** Communication

To develop the test, the DigComp 2.1 dimensions and items referred to in the instruments of Contreras et al. (2019) ; Martínez et al. (2018) , the items were adapted to the 4 items of each of the two dimensions to measure digital competences:

First, the video was shown and the pre-test was administered during the first week of May. For the experimental group, a video was distributed (2016); then the post-test was administered.

To determine the influence of the video (2016) on digital skills in state managers and sports entrepreneurship projects in the GE and for the GC, the traditional methodology was also used (with information printed on a single page) because managers usually share printed information; the information shared in print and by video (2016), as well as the test was approved by expert judgment with 98% and 96% approval respectively, and with a high



reliability of Cronbach's Alpha of 0.84 and 0.86, which examined the reliability of the information and the questions shown.

After the GE and GC were formed, the managers were consulted so that they would limit themselves to only the information provided. *In addition, coordination was made with some co-authors to facilitate the dissemination of specific information for each group*. The managers answered the pre-test and the post-test for a maximum of 30 minutes. This test is shown in Table 1. (They were instructed to check the box on the right, corresponding to each of the 16 items.)

Quantification of ratings obtained in the pre-test and post-test

To determine the learning level of the sample, the information from the test, provided in the pre- and post-test, was considered using the following scores:

- **Highest score:** always (3 points).
- **Intermediate score:** sometimes (2 points).
- **Low score:** never (1 point).

Scoring ranges: There were 16 items in the test applied at both times. The minimum score was one point for each item, with a minimum average of 16 points; the intermediate score was two points for each item, with an intermediate average of 32 points; and the maximum score was three points for each item, with 48 points.

Statistical analysis inferential

Student T test was used. For related samples, the normal distribution of the data was previously tested, a significance level of $p < 0.05$ and a 95% confidence interval were established to interpret the results with respect to the significant difference in mean at the post-test level. The following hypotheses were considered:



- **Null hypothesis at the pre-test level:** there are no significant differences between the mean at the pre-test level. Alternative hypothesis at the pre-test level: there are significant differences between the mean at the pre-test level.
- **Null hypothesis at the post-test level:** there are no significant differences between the mean at the post-test level. alternative hypothesis at the post-test level: there are significant differences between the mean at the post-test level.

Pre-test level: The homogeneity or heterogeneity of the GC and GE means was determined by means of the Student T hypothesis test; after verifying the normal distribution of the data, the Student T parametric statistic was applied , the results of which are shown in Table 2.

Table 2. Student T-test for Pre-test

	GC	GE
Average	24.13	25.87
Variance	12.12	27.69
Observations	15.00	15.00
Difference in means (GE-GC)	0.07	
Significance	1.73	

Interpretation of Table 2: At the pre-test level, the averages for the GE and the CG were similar with a minimal difference of 0.07. The variation for the GE was greater than for the CG; but their averages were similar, which guaranteed similar conditions at the beginning of the process. Since the significance was greater than 0.05, the null hypothesis was approved at the pre-test level: there are no significant differences between the means.

Descriptive and inferential results at the post-test level : when analyzing the results after applying them to the items in Table 3, the heterogeneity of the averages of the GC and GE was determined by means of the hypothesis test using Student `s T test ; after verifying the normal distribution of the data; therefore, the Student `s T parametric statistic was applied , the results of which are shown in Table 3.



Table 3. Student 's T-test for Posttest

	GC	GE
Average	32.73	37.87
Variance	12.35	12.84
Observations	15.00	15.00
Difference in means (GE-GC)	5.13	
Significance	0.00	

Interpretation of Table 3: At the post-test level, the averages for the GE and the CG had a considerable difference of 5.13. The variation for the GE was greater than for the CG; but their averages were different as were the results at the end of the process. Since the significance was less than 0.05, then the null hypothesis is rejected and the alternative hypothesis is accepted at the post-test level: there are no significant differences between the means at this level.

This research presents a proposal similar to the research by Ramos (2022) where a questionnaire on job performance and human interrelations was evaluated, administered by the management staff of a University.

instruments are a necessity for State managers, as they have an impact on their peers and subordinates; in addition, the activities are linked to technology and real-time computing and can promote application with technological and automated platforms (Contreras et al., 2019)

The aim of the research was to propose a measurement instrument using digital skills, which would allow the evaluation of the two variables in a single instrument, avoid difficulties of stress for managers when searching for several instruments and determine their usefulness by using them to preserve the health of police managers, who usually have other work activities and to simplify the search for instruments and find some that are totally useful.

Impact of the unified measurement instrument:



- Existing research on information literacy of public managers uses different measurement instruments, which makes it difficult to compare results.
- A single, standardized instrument is required to comprehensively assess the information literacy skills of public managers.
- This instrument identifies the areas of greatest deficiency, in order to develop effective intervention strategies.

Arias & Covinos (2021) explore the impact of physical activity on the job performance of public officials and Campos (2021) focuses directly on physical activity and raises the need for public officials to adapt to a constantly changing work environment. Regular exercise can be a way to improve the adaptability and general well-being of public employees. It is considered that regular practice of sport, specifically football, can have benefits for public sector workers by including:

- Improved physical and mental health: Physical exercise is associated with a reduction in stress, anxiety and depression, as well as improved concentration and memory.
- Increased productivity: Better physical and mental health can lead to higher energy and concentration levels, which in turn can improve job performance.
- Reduced absenteeism: Physically active employees tend to have fewer sick days.
- Increased job satisfaction: Physical exercise can contribute to greater job satisfaction and a better overall quality of life.

However, it is important to note that prioritizing football practice over administrative tasks is not a solution and must be evaluated on a case-by-case basis. Each individual has different needs and responsibilities, and the amount of time that can be dedicated to exercise varies depending on factors such as workload, family responsibilities and health conditions.

Consequently, the implementation of a unified instrument to measure digital skills and sports entrepreneurship projects in the public sector is an initiative that can generate multiple benefits for both employees and institutions, by allowing a more precise and objective assessment that allows for more informed decisions and the design of more



effective programs for the development of talent and physical health through sport, specifically through projects linked to football.

CONCLUSIONS

The need to create a unifying instrument to enhance digital skills and sports entrepreneurship projects was demonstrated, and the influence of a video on digital skills in sport, specifically in football, was determined by providing a unified instrument to measure the digital skills of state managers and to measure sports entrepreneurship projects.

REFERENCES

- Andrades-Suárez, Katalina, Faúndez-Casanova, César, Carreño-Cariceo, Javier, López-Tapia, Matías, Sobarzo-Espinoza, Felipe, Valderrama-Ponce, Claudio, Villar-Cavieres, Natalia, Castillo-Retamal, Franklin, & Westphal, Greice. (2022). Relación entre actividad física, rendimiento académico y funciones ejecutivas en adolescentes: una revisión sistemática. *Ciencias de la actividad física (Talca)*, 23(2), 10. Epub 08 de noviembre de 2022. <https://dx.doi.org/10.29035/rcaf.23.2.10>
- Arias, J. (2021). Adaptabilidad a las tecnologías de la información, comunicación y procrastinación laboral en colaboradores del sector público en Arequipa. *Revista Científica UISRAEL*, 8(1), 7789. <https://doi.org/10.35290/rcui.v8n1.2021.348>
- Arias, J., & Covinos, M. (2021). Diseño y metodología de la investigación (Primera). *Enfoques Consulting EIRL*. <http://hdl.handle.net/20.500.12390/2260>
- Campos, C. (2021). El futuro del empleo público local: retos ante un mundo digital. *Documentación Administrativa*, 7, 126144. <https://doi.org/10.24965/da.i7.10894>
- DigComp, Marco de Competencias Digitales para la Ciudadanía Con ocho niveles de competencia y ejemplos de uso AUPEX, 2018 <https://www.aupex.org/centrodocumentacion/pub/DigCompEs.pdf>



Contreras, J., Piedrahita, A., & Ramírez, I. (2019). Competencias digitales, desarrollo y validación de un instrumento para su valoración en el contexto colombiano. *Trilogía Ciencia Tecnología Sociedad*, 11(20), 205232. <https://doi.org/10.22430/21457778.1083>

DECRETO SUPREMO N ° 164-2021-PCM. (2021). Decreto Supremo que aprueba la Política General de Gobierno para el periodo 2021-2026. *Diario Oficial El Peruano*, 1419. <https://busquedas.elperuano.pe/normaslegales/decreto-supremo-que-aprueba-la-politica-general-de-gobierno-decreto-supremo-n-164-2021-pcm-2002063-5/>

Dill'Erva, I. (2021). Retos de la administración pública del bicentenario. *Revista de La Escuela Nacional de Administración Pública Del Perú*, 5, 117138. <https://doi.org/10.54774/ss.2021.05.07>

García, K., Ortiz, T., & Chávez, M. (2021). Relevancia y dominio de las competencias digitales del docente en la educación superior. *Revista Cubana de Educación Superior*, 40(3), 115. http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S0257-43142021000300020

Gonzales, J., & Oseda, D. (2021). Influencia de herramientas virtuales en el desarrollo de competencias digitales. *Ciencia Latina Revista Científica Multidisciplinar*, 5(4), 60736097. https://doi.org/10.37811/cl_rcm.v5i4.759

Martínez, M., Sábada, C., & Serrano, J. (2018). Desarrollo de competencias digitales en comunidades virtuales: Un análisis de «ESCOLARTIC». *Revista de Investigación Social*, 20, 129159. <https://revistaprismasocial.es/article/view/2318>

Ramos Quispe RL (2022) Propuesta de cuestionario sobre desempeño laboral e interrelaciones humanas administrado por el personal directivo de una Universidad. *larevi* [Internet]. 8 de agosto de 2022 [citado 8 de junio de 2024];1(1). Disponible en: <https://gestion.es.pe/index.php/revista/article/view/9>



Morales, R., & Rodríguez, P. (2020). Las competencias digitales en TIC aplicadas en las organizaciones. *International Journal of Information Systems and Software Engineering for Big Companies*, 7(1), 2535.
<http://uajournals.com/ojs/index.php/ijisebc/article/view/764>

García-González, S., Del Pozo, F., Paredes, W., & Del Pozo, H. (2018). Los MOOC: tecnología y pedagogía emergente para la democratización del conocimiento. *Rev. Perspect*, 19, 215-224.
http://mail.upagu.edu.pe/files_ojs/journals/27/articles/584/submission/proof/584-133-2103-1-10-20180822.pdf

Video (2016) *Emprendimiento Deportivo: 5 Ideas para emprender en el mundo del deporte y Negocios* y *Empre*
https://www.youtube.com/watch?v=GZaUxR8B5Sw&ab_channel=NegociosyEmpr
endimiento

Conflict of interest statement:

The author declares that there are no conflicts of interest.

Author's contribution:

The author is responsible for writing the work and analyzing the documents.



This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International license.

