



of Higher Education Sciences.



Received: December 15, 2022

Accepted: February 15, 2023

Original article

Training of digital skills in the Mechanical Engineering career at the University of Pinar del Río "Hermanos Saíz Montes de Oca"

Formación de habilidades digitales en la carrera Ingeniería Mecánica en la Universidad de Pinar del Río "Hermanos Saíz Montes de Oca"

Treinamento de habilidades digitais na carreira de Engenharia Mecânica na Universidade de Pinar del Río "Hermanos Saíz Montes de Oca"

Yuslenia Sotolongo Rodríguez¹



<http://orcid.org/0000-0002-9622-8047>

Juan Lázaro Márquez Marrero²



<http://orcid.org/0000-0001-9632-9350>

¹ University of Pinar del Río "Hermanos Saíz Montes de Oca". Resource Center for Learning and Research (CRAI). Department of Information Sciences.



yusle@upr.edu.cu

² University of Pinar del Río "Hermanos Saíz Montes de Oca". Cuba, Center for the Study

ABSTRACT

The present work was directed to the improvement of the process of formation of digital skills to the professors of the Mechanical Engineering career of the University of Pinar del Río. The proposed objective was to determine the fundamentals of the process of training digital skills for professors of the Mechanical Engineering career at the University of Pinar del Río. To achieve this, the dialectical-materialist method was used as the guiding method, which allowed complementing the use of theoretical methods such as historical-logical, modeling and systemic-structural; Among the empirical methods, document analysis, survey and interview, and observation were used. The theoretical foundations for the training of digital skills for teachers of the Mechanical Engineering career at the University of Pinar del Río were determined; the principle of transversality, the transit through the different stages of the skill until it is internalized and the action of the internal structure of the skill, in each subject of the career curriculum, developing through actions and operations that coincide with the training Digital skills for teachers. Based on the proposed theoretical foundations, a cycle of methodological forms was structured for its implementation by fulfilling the methodological work of the Department of Mechanics of the University of Pinar del Río, being conceived from the methodology the formation of digital skills in this career.

Keywords: digital skills; digital skills; digital resources; methodological work.

RESUMEN

El presente trabajo estuvo dirigido al perfeccionamiento del proceso de formación de habilidades digitales en los profesores de la carrera Ingeniería Mecánica de la Universidad de Pinar del Río "Hermanos Saíz Montes de Oca". El objetivo propuesto fue determinar los fundamentos del proceso de formación de habilidades digitales en profesores de la carrera Ingeniería Mecánica de la Universidad de Pinar del Río "Hermanos Saíz Montes de Oca". Para lograrlo se utilizó como método rector el dialéctico-materialista, lo que se complementó con el uso de métodos teóricos como el histórico-lógico, la modelación y el sistémico-estructural; entre los métodos empíricos se emplearon: el análisis de documentos, la entrevista, la observación y la estadística descriptiva. Se determinaron los fundamentos teóricos para la formación de habilidades digitales en los docentes de la carrera Ingeniería Mecánica de la Universidad de Pinar del Río "Hermanos Saíz Montes de Oca"; el principio de transversalidad, el tránsito por las diferentes etapas de la habilidad hasta lograr su interiorización y la acción de la estructura interna de la habilidad en cada asignatura del currículum de la carrera, desarrollándose a través de acciones y operaciones que coinciden con la formación de habilidades digitales para los docentes. A partir de los fundamentos teóricos propuestos se estructuró un ciclo de formas metodológicas para su implementación, mediante el cumplimiento del trabajo metodológico del departamento de Mecánica de la Universidad de Pinar del Río "Hermanos Saíz Montes de Oca", quedando concebido desde la metodología la formación de habilidades digitales en esta carrera.

Palabras clave: habilidades digitales; competencias digitales; recursos digitales; trabajo metodológico.

RESUMO

O presente trabalho foi direcionado para a melhoria do processo de formação de habilidades digitais nos professores da carreira de Engenharia Mecânica da Universidade de Pinar del Río "Hermanos Saíz Montes de Oca". O objetivo proposto foi determinar os fundamentos do processo de formação de habilidades digitais em professores da carreira de Engenharia Mecânica da Universidade de Pinar del Río "Hermanos Saíz Montes de Oca". Para isso, utilizou-se como método norteador o método materialista-dialético, complementado com a utilização de métodos teóricos como o histórico-lógico, modelador e sistémico-estrutural; Métodos empíricos utilizados: análise documental, entrevista, observação e estatística descritiva. Foram determinados os fundamentos teóricos para a formação de habilidades digitais nos professores da carreira de Engenharia Mecânica da Universidade de Pinar del Río "Hermanos Saíz Montes de Oca"; o princípio da transversalidade, o trânsito pelas diferentes fases da competência até à sua internalização e a ação da estrutura interna da competência em cada disciplina do currículo de carreira, desenvolvendo-se através de ações e operações que coincidem com a formação de competências digitais para professores. Com base nos fundamentos teóricos propostos, estruturou-se um ciclo de formas metodológicas para sua implementação, através do cumprimento do trabalho metodológico do Departamento de Mecânica da Universidade de Pinar del Río "Hermanos Saíz Montes de Oca", sendo concebido a partir da metodologia que o formação de competências digitais nesta carreira.

Palavras-chave: competências digitais; competências digitais; recursos digitais; trabalho metodológico.

INTRODUCTION

The improvement in the formation of digital skills directly impacts the transformations of this process in the faculty of the Mechanical Engineering career, based on the training received through compliance with the methodological work of the department.

The technological revolution promoted in recent decades has brought far-reaching repercussions in the face of an imminent digital age marked by globalization and technological innovation, which is why different organizations have raised the importance of innovating education with the training of digital skills in the teaching process. education and, therefore, university education is not exempt from this.

In a strong educational context, Information and Communication Technologies (ICT) can help teachers acquire the necessary skills to become: competent to use information technologies; information search engines, analyzers and evaluators; problem solvers and decision makers; creative and effective users of productivity tools; communicators, collaborators, publishers and producers; informed, responsible and capable citizens of contributing to society (UNESCO, 2008).

The training of teachers' digital skills has been approached from various models by researchers and/ or international organizations, says Sierralta (2021); emphasizing that within these models we can mention the model of the ATIC project (Accreditation of Competences in

Information and Communication Technologies) of Catalonia, Spain, which works on eight competencies: culture, participation and digital citizenship; digital technology and use of computer and operating system; navigation and communication in the digital world; treatment of written communication; processing of graphic, sound and moving image information; treatment of numerical information; data processing; and content presentation. Trends in terms of digital skills in recent years have also been influenced by the term information skills training, given by the ALFIN model, coined in 2011 by Marzal and which emphasizes three major components: access, evaluation and use of information.

Consequently, Sierralta expresses studies such as the Horizon Report; Trends in university education recognize the training of digital skills in teachers as a difficult challenge to address and on which it is necessary to continue putting efforts from all those who participate in the process.

Thus, the concept of digital competence is classified as multidimensional, which encompasses a set of interrelated skills and attitudes that cover technical, informational, content creation, media, communication, problem solving, as well as decision-making aspects. strategic and ethical decisions. This becomes more than technological skills, and in acquiring and developing a critical position regarding the use of ICT (Cabero-Almenara & Palacios-Rodríguez, 2020; Sánchez-Caballé *et al.*, 2020).

The international community has decided to measure the "Percentage of young people and adults who have reached at least a minimum level of competence in digital literacy", as one of the indicators of compliance with SDG 4 (Unesco 2018).

In order to achieve this goal, it is imperative to define digital competences that are relevant in local and global contexts, as well as to incorporate them in a coherent way in the curricula and in the learning assessments of formal and non-formal education of the training systems and capacity development initiatives.

Although there seems to be a consensus on the scope of digital skills, Unesco (2018) reaffirms that the definition of these skills must reflect a variety of skills or specific practices required to use various devices and in various applications.

It is challenging to define a set of essential digital competences that all students or adult learners should develop, while ensuring that they are applicable to the different circumstances and contexts in which students need to use them.

It is an edge to deploy within the teaching-learning process, the need to develop the training of digital skills due to the infallible nature of good practices that Information and Communication Technologies (ICT) have in the digital environment, for which It is necessary to improve the training of these skills in teachers to achieve a future digitally competent professional.

Consequently, training in specific skills typical of the virtual universe is required, the so-called digital skills; These are the sum of knowledge, abilities, skills, attitudes and strategies that are required for the use of technologies and the Internet, as specified by Morduchowicz (2021).

In order to achieve this goal, it is imperative to define digital competences that are relevant in local and global contexts, as well as to incorporate them in a coherent way in the curricula and in the learning assessments of formal and non-formal education, of

training systems and capacity development initiatives.

Although there seems to be a consensus on the scope of digital skills, the definition of these skills should reflect a variety of skills or specific practices required to use various devices and in various applications. It is challenging to define a set of essential digital skills that all adult learners should develop, while ensuring that they are applicable to the different circumstances and contexts in which students need to use them throughout their professional training.

For the Higher Education teacher, as stated by García, Ortiz and Chávez (2021), the mastery of digital skills is of the utmost importance, for which reason they should not assume another position than to deepen their learning. It is not enough to think of them for management purposes, information search or the creation of educational resources, since it is considered that there are great opportunities in the area of evaluation of educational practices, the generation and application in lines of research, among other.

The contemporary teacher must present better skills in his professional profile, due to two essential emerging factors: (a) growth in the appearance of technologies, (b) development of new methodologies based on artificial intelligence, so his response must be eager in relation to the main contexts of attention, which allows accepting that digital skills are the group of skills, knowledge and attitudes in the use of technologies to put them into practice, and transfer them in educational mediation exercised by another more skilled subject (Zhao *et al.*, 2021, cited by Holguín-Álvarez *et al.*, 2021).

Therefore, it is determined that the reality of the problem by identifying the process of training digital skills is insufficient. There are some deficiencies in the use, creation and

management of digital content and little presence of these skills in the curricular programs of the career; identifying as a need the existence of a cycle of methodological forms that promotes from the methodology the formation of digital competences in the teachers of the Mechanical Engineering career, raising the level in the use of tools and technological devices in a digital environment for a professional of this time. From the above, the objective of this work is declared, which consists of determining the foundations of the process of training digital skills in the Mechanical Engineering career of the University of Pinar del Río "Hermanos Saíz Montes de Oca".

MATERIALS AND METHODS

For the development of this work, a population made up of 23 teachers, divided into the different disciplines that the career contains, was selected from the faculty of the Mechanical Engineering career.

The research, from the methodological point of view, is based on a dialectical-materialist approach, which is used in all stages, while it is assumed as the general method of the same that, at the same time, offers a guide for action. and to obtain the possible results.

To do this, we start from living contemplation to abstract thought, and from there to enriched practice, which allowed us to determine the object of study and its components, as well as the relationships that occur within the process of training digital skills and their relation to the cycle of methodological forms proposed.

It was allowed to complement the use of theoretical methods such as the historical-logical, to systematize the theoretical, methodological, historical and current

background that characterizes the process of training digital skills in Higher Education in the world, in Cuba and, specifically, in the University of Pinar del Río "Hermanos Saíz Montes de Oca".

The modeling method allowed the elaboration of the theoretical foundation to promote the process of formation of digital skills in the Mechanical Engineering career of the University of Pinar del Río "Hermanos Saíz Montes de Oca".

The structural systemic was used to conceive the structural components and the dynamic relationships of the investigated object, based on the functional determination of the didactic structure and the implementation methodology that offers the establishment of moments, stages and phases of this process, dimensions and indicators; all through the determination of the relationships between them, as well as the definition of terms necessary for the formation of digital skills in the Mechanical Engineering career of the University of Pinar del Río "Hermanos Saíz Montes de Oca".

Among the empirical methods, the documentary analysis was used, which was carried out on the normative and methodological documents of the career, the Study Plan, the Professional Model and the 2018 Accreditation Report. Class observations, methodological and evaluation meetings were used. department, which allowed the collection of information through the guide prepared on the formation of digital skills in the Mechanical Engineering career. The descriptive statistics allowed processing the information on the characterization of the current state of the process of training digital skills in the Mechanical Engineering career. To corroborate the current situation of the formation of digital skills, an interview was applied to the professors of the Mechanical Engineering career.

RESULTS

Implementation of the theoretical foundations for the formation of digital skills, from a cycle of methodological forms to the teachers of the Mechanical Engineering career, establishing the six progressive management competence levels issued by INTEF, 2017 as the selected framework (table 1).

Table 1- Progressive management skills levels

LEVELS	SUB-LEVELS	DESCRIPTION
ESSENTIAL	A1	This person has a basic level of competence and requires support to be able to develop their digital competence.
	A2	This person has a basic level of competence, although with a certain level of autonomy and with appropriate support they can develop their digital competence.
INTERMEDIATE	B1	This person has an intermediate level of competence, so, by themselves and by solving simple problems, they can develop their digital competence.
	B2	This person has an intermediate level of competence, so that, independently, responding to their needs and solving well-defined problems, they can develop their digital competence.
ADVANCED	C1	This person has an advanced level of competence, so they can guide other people to develop their digital competence.
	C2	This person has an advanced level of

		competence, therefore, by responding to their needs and those of other people, they can develop their digital competence in complex contexts.
--	--	---

Source: INTEF, 2017

For the determination of the theoretical foundations for the formation of digital skills, the criteria of the General Directorate of Computing and Information and Communication Technologies, National Autonomous University of Mexico (DGTIC, UNAM) is assumed, which they understand by digital skills: the set of knowledge (knowing how to do and knowing about doing) related to the use of communication tools, access, processing and production of information.

The process of training digital skills in the Mechanical Engineering career supported by the principle of transversality

Marín, Vidal, Peirats and San Martín (2019) consider that mainstreaming is an appropriate alternative for improving the technological training of teachers.

For their part, Piñero, Martín (2010) state that the proposed Curricular Model (UPEL, 2006) assumes the transversality applied to the curriculum, from a humanistic and integrating perspective, which focuses its attention on the formation of the person from seven fundamental axes: research, national identity, language, Information and Communication Technologies, environment, ethics and values, and didactics. Beyond the declarative purposes of curricular transversality, there is the methodological approach that will allow the effective insertion of the axes in the curricular framework and in the academic activity of

the actors in the learning process. Transversality is an integral part of the contents and activities of the study programs, it is integrated into them, it is part of them. It is about the subjects reaching the transversal contents/skills/attitudes and values, as the program develops, not separately.

Consequently, the faculty of the Mechanical Engineering major will be supported from a transversal perspective throughout the entire curriculum for the formation of digital skills.

Based on the analysis of the definition of digital skills previously mentioned in this research, issued by INTEF, we can consider that the training of digital skills in the educational context necessarily implies a transversal nature, providing teachers with said skills from an instrumental approach, communicative, search and information management, investigative and didactic-methodological.

The professors of the mechanical engineering career of the University of Pinar del Río "Hermanos Saíz Montes de Oca", must not only have mastery in the instrumental management of ICT, but must know how to consider appropriate methodological strategies to link the actions and operations of said skills to the curriculum, and this can only be achieved through transversality.

The training of digital skills to the professors of the Mechanical Engineering career must go through the different stages of the skill until it is internalized

The formation of skills is not achieved in the execution of a single action at a given time. It is necessary to go through several stages in this process, which in its development will allow the formation of the same, such as:

diagnosis and motivation, selection, operationalization and systematization.

Diagnosis and motivation: it corresponds to the initial diagnosis that must be developed to the professors of the Mechanical Engineering career, with the particularity that this must be designed based on digital skills; In this way, it will allow to know the shortcomings of teachers in relation to digital management with information resources, as well as their knowledge in this regard and, at the same time, they will feel motivated, managing to develop each one of them until their entirety because they have a sequential nature. .

Selection: it is the stage in which the teacher must create the necessary conditions for the process to be executed correctly; makes an adequate selection of the methods, means, organizational forms of teaching, in correspondence with the goal or purpose to be achieved in the subject taught.

Operationalization: it is developed at the subject or theme level, by stimulating the teacher in the operationalization of the actions to be executed in each of the digital skills.

Systematization: in this stage, once the operations have been mastered by the teachers through the design of various and diverse tasks, they manage to systematize the operations until they become habits, which once acquired by them will become useful digital skills for the management of the information in solving professional problems.

The formation of the internal structure of the skill that is developed through actions and operations that coincide with the digital skills to be developed in the Mechanical Engineering career

Information and Information Literacy:

1. Navigation, search and filtering of information, data and digital content.
2. Evaluation of information, data and digital content.
3. Storage and retrieval of information, data and digital content.

Communication and collaboration:

1. Interaction through digital technologies.
2. Share information and digital content.
3. Online citizen participation.
4. Collaboration through digital channels.
5. Netiquette.
6. Digital identity management.

Digital content creation:

1. Development of digital content.
2. Integration and re-elaboration of digital content.
3. Copyright and licenses.
4. Programming.

Security:

1. Protection of devices.

2. Protection of personal data and digital identity.
3. Health protection.
4. Protection of the environment.

Problem resolution:

1. Resolution of technical problems.
2. Identification of needs and technological responses.
3. Innovation and creative use of digital technology.
4. Identification of gaps in digital competence.

Cycle of methodological forms

I. Methodological meeting on the formation of digital skills in teachers of the Mechanical Engineering career of the University of Pinar del Río "Hermanos Saíz Montes de Oca".

Theme of the meeting: the training of digital skills in teachers in the Mechanical Engineering career.

In this space, all the theory on digital skills was addressed in a general way, in a digital resource (presentation), using CANVA and based on the analysis of different questions such as:

What are digital skills?

What are digital skills?

How important is the formation of these skills in Higher Education?

How important is the training of these skills in Mechanical Engineering?

What is the relationship between these skills and information management?

Knowledge system: interaction through digital technologies. Share information and digital content. Online citizen participation. Collaboration through digital channels. netiquette Digital identity management.

What is the relationship between digital skills and digital competencies?

How to manage digital information from Mechanical Engineering?

System of actions to develop: interact in the digital environment. Share information and digital content. Collaborate through digital and online channels. Define the term netiquette. Its importance in the network.

II. Workshops for training digital skills.

A workshop will be held for each area of competence:

c) Creation of digital content

a) Information and Information Literacy

Objective: manage digital information through the use of tools and information resources to improve the quality of the teaching-learning process of the curriculum of the Mechanical Engineering degree.

Objective: to develop digital content through the use of computer resources and tools to improve the teaching-learning process.

Knowledge system: navigation, search and filtering of information, data and digital content. Evaluation of information, data and digital content. Storage and retrieval of information, data and digital content.

Knowledge system: digital content development. Integration and re-elaboration of digital content. Copyright and licenses. Programming.

System of actions to be developed: browse social and academic networks, websites. Search for information to satisfy information needs. Filter information (selection of data for the configuration of information). Evaluate the information retrieved based on established criteria and indicators. Information Organization. Store data and information in the cloud as a network storage service.

System of actions: develop digital content for the improvement of the teaching-learning process in the Mechanical Engineering career. Integrate and rework digital content to conceive new digital content. Identify principles and laws of copyright and licenses, for the benefit of the use and communication of information. Identify elementary theoretical-practical aspects of programming linked to the creation of digital content.

b) Communication and collaboration

Objective: communicate information through digital technologies for academic collaboration in the Mechanics department.

d) Security

Objective: to protect digital information through the codes and standards established for the assurance of academic and teaching information in the digital environment.

Knowledge system: device protection. Protection of personal data and digital identity. Health protection. Environment protection.

System of actions to develop: protect the devices (antivirus). Protect personal data and personal identity (passwords, keys). Protect digital health (digital tools for prevention, diagnosis and treatment). Protect the environment (measures and criteria to protect the academic-teaching digital environment).

e) Troubleshooting

Objective: solve technical problems through the use of computer resources for the proper functioning of ICT, depending on the teaching process.

Knowledge System: resolution of technical problems. Identification of needs and technological responses. Innovation and creative use of digital technology. Identification of gaps in digital competence.

System of Actions to develop: solve technological problems. Identify the needs and responses of ICT. Use digital technology creatively. Identify gaps in digital competence linked to the teaching-learning process.

III. Integrator workshop on the application of the digital skills system to professors of the Mechanical Engineering career

Objective: to integrate the digital skills system to the professors of the Mechanical Engineering career.

Development of the workshop: in this workshop the professors will discuss how the digital skills integrated into the career curriculum are formed, for each of the disciplines, as well as the subjects of each of them.

Conclusions of the workshop: at the end of each workshop, the teachers will be leveled through the progressive levels of

management skills, where teachers who level in Basic (A1 and A2) and Intermediate (B1 and B2) will gradually be trained from the methodology, up to the Advanced level (C1 and C2).

DISCUSSION

The analyzes of the different international reference frameworks of existing digital competence models led to the conceptual theoretical study carried out for this research, but the Common Framework of Teacher Digital Competence (MCCDD) is assumed. This framework is a reference for the diagnosis and improvement of teachers' digital skills. The latter are defined as competencies that teachers of the 21st century need to develop in order to improve their educational practice and for continuous professional development. The Common Digital Competence Framework for Teachers is made up of five competency areas and 21 competencies structured into six management competency levels, as shown in the figure below. Each of these competencies offers a detailed description, as well as descriptors based on terms of knowledge, skills and attitudes. This framework (figure 1) is the basis of the Digital Teacher Competence Portfolio, a digital instrument of the National Institute of Educational Technologies and Teacher Training (INTEF), for the accreditation of said competence (INTEF, 2017).



Fig. 1- Common Framework for Teacher Digital Competence
Source: INTEF, 2017

The aforementioned document states that, according to European Parliament and the Council "Digital competence implies the critical and safe use of Information Society Technologies for work, free time and communication. Relying on basic ICT skills: use of computers to retrieve, evaluate, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet" (European Parliament and the Council, 2006). In this definition we find the main skills of digital competence. The definition and explanation of the competence components provided in the recommendation provide an overview of digital competence, making it clear that when using digital tools, operational skills are a small proportion of the necessary knowledge. From the recommendation, information management, communication in social environments and the ability to use the Internet for learning purposes have become highly relevant fields; also, for critical thinking, creativity and innovation. However, the access devices are increasingly diverse, and we no longer only access from the computers that were mentioned in 2006.

REFERENCES

- Cabero-Almenara, J. y Palacios-Rodríguez, A. (2020). Marco Europeo de Competencia Digital Docente «DigCompEdu» y cuestionario «DigCompEdu Check-In». EDMETIC. *Revista de Educación Mediática y TIC*, 9(1), 213-234. <https://doi.org/10.21071/edmetic.v9i1.12462>
- García, K. A., Ortiz, T., Chávez, M. D. (2021). Relevancia y dominio de las competencias digitales del docente en la educación superior. *Revista Cubana Educación Superior* 40(3)
- Holguín-Álvarez, J.; Rodríguez, M.; Romero-Hermeza, R.M.; Ledesma-Pérez, F.; Cruz-Montero, J. (2021). Competencias digitales y resiliencia: una revisión teórica enfocada en el profesorado. *Revista de Investigación Apuntes Universitarios* 11(4), 269-295 ISSN: 2304-0335 DOI: <https://doi.org/10.17162/au.v11i4.773>
- INTEF (2017). *Marco Común de Competencia Digital Docente*. INTEF
- Marín, D.; Vidal, M. I.; Peirats, J.; San Martín, A. (2019). Competencia digital transversal en la formación del profesorado, análisis de una experiencia. *Innoeduca. International Journal of Technology and Educational Innovation*, 5(1), 4-12, ISSN: 2444-2925
- Morduchowicz, R. (2021). *Competencias y habilidades digitales*. UNESCO,

<http://www.unesco.org/open-access/terms-use-ccbysa-sp>

Piñero, M. L. y Rivera, M. E. (2010). Transversalidad e integración de competencias específicas en, por y para las TIC y la investigación en la formación de formadores. *MULTICIENCIAS*, 10(1), 29-36, ISSN: 1317-2255

Sierralta Pinedo, S. (2021). Competencias digitales en tiempos de COVID-19, reto para los maestros de la Institución Educativa CECAT "Marcial Acharán. *Mendive. Revista*

de Educación, 19(3), 755-763.
<https://mendive.upr.edu.cu/index.php/MendiveUPR/article/view/2569>

UNESCO. (2008). *Estándares de competencias en TIC para docentes*. UNESCO. Recuperado de <http://eduteka.icesi.edu.co/pdfdir/UNESCOEstandaresDocentes.pdf>

UNESCO (2018). *Competencias para un mundo conectado. Semana del aprendizaje móvil. Nota conceptual*. Recuperado de <https://www.unesco.org/new/en/mlw/2018>

Conflict of interests:

The authors declare not to have any interest conflicts.

Contribution of the authors:

The authors participated in the design and writing of the work, and analysis of the documents.

Cite as

Sotolongo Rodríguez, Y., & Márquez Marrero, J. (2023). Formation of digital skills in the Mechanical Engineering career in the University of Pinar del Río "Hermanos Saíz Montes de Oca". *Mendive. Revista de Educación*, 21(2), e3313.
<https://mendive.upr.edu.cu/index.php/MendiveUPR/article/view/3313>



This work is [licensed under a Creative Commons Attribution- NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/).