VNiVERSiDAD D SALAMANCA

CAMPUS DE EXCELENCIA INTERNACIONAL

Ph.D. Thesis SUMMARY

DESIGN, DEVELOPMENT, IMPLEMENTATION AND EVALUATION OF THE PROGRAM "E-MENTORING IN ACADEMIC INTERNSHIP PROGRAMS". SUMMARY.

AUTHOR

D. Harold Tinoco-Giraldo

SUPERVISORS

Dra. Dª. Eva María Torrecilla Sánchez

Dr. D. Francisco José García-Peñalvo

EDUCATION IN THE KNOWLEDGE SOCIETY Ph.D. PROGRAMME
(RD 99/2011)

Research Institute for Educational Science (IUCE)
GRIAL Research Group

Salamanca
June 2021

Abstract

Mentoring is a practice that supports learning, experimentation and helps students in Higher Education to develop their potential. A mentoring relationship is one in which both the mentor and mentee, recognize the need for professional and personal development.

Thus, mentoring is beneficial for both individuals and institutions of Higher Education, as it is an activity that increases the commitment and academic talent of their students, facilitating the preparation for their personal and professional processes in the future. Its relevance is gaining ground in some Higher Education contexts, since in some cases and in some universities, their academic internships processes have been neglected and unprotected, especially focused on the support of internship coordination's and inexperienced tutors, and without integrating tools that allow reaching explicit knowledge of the competency needs of their trainees.

As is recognizable, the companions in the academic internship experience are the internship tutors, the business advisors and the internship coordination. From here on, the actions and support that occur will be decisive for the Practicum to acquire the formative element characteristic of any academic subject, which is not reflected in the current characteristics of the process. On the other hand, the reception at the internship site and the very process that this experience constitutes, can become invaluable and insignificant when there is no mentor with experience at the same practical level.

The infrequency of interactions between these formative companions gradually suspends the ideas of formative evaluation of the Practicum. The lack of an appropriate and facilitating channel of communication between the trainee, the recognition of their academic and professional needs and their situation of abandonment in the internship company by their different tutors, raises the need to link mentoring in these processes.

Students in internships need to learn aspects related to the context in which they find themselves, they need to recognize their professional competences and establish professional relationships with other subjects. Higher Education institutions could add support to these underrepresented academic groups of students, recognizing their academic, professional and practical needs, raising awareness of the importance and interest of mentoring in academic practice, and thus expanding the students' professional development opportunities.

In this context, mentoring would articulate the improvement of learning, research and development of students in internships. Therefore, this research is interested in the role that mentoring can play as a strategy for academic and professional support in the academic internships of students in university degrees in social sciences and health sciences.

Under this approach, this thesis aims to validate an e-mentoring model to stimulate the acquisition of professional competencies in students of academic internships, seeking to provide a safe academic and professional support environment where participants can share any critical problem that affects their professional and personal success. Thus, the "E-mentoring in academic internship programs" is designed following the ADDIE model (Analysis, Design, Development, Implementation and Evaluation) and an evaluation process is carried out to verify its effectiveness.

Therefore, in order to respond to the objective, a pre-posttest experimental study with a related group has been carried out to record the professional competencies in the training of the students of the different participating academic programs. For such process, two parts have been developed, firstly, a pilot study

for the validation of the e-mentoring program generated, in a Colombian university with students of academic internship of a Marketing program. After the results achieved in this first study, the program is adapted and an experimental study is implemented, in which three academic programs from three universities (two Colombian and one American) are integrated, the same Marketing program, a Bachelor's degree program in technology and Computer Science from a Faculty of Education and a Medical program, respectively. As this was a pretest-posttest study, a competency evaluation rubric was used to assess the skills, dispositions and competency domains of the participants and a satisfaction survey designed to measure the impact of the program.

After the data analysis implemented in both studies, it is highlighted that the competency levels of each participant sample improved after having implemented the mentoring program. A competency improvement is recognized in the post-test study and a positive recognition by the mentors of these improvements. Likewise, the level of satisfaction with the program is high, recognizing the implementation of the program, the resources used and the adequate training of the mentors.

At the end of the study, it is considered relevant to highlight a series of recommendations. On the one hand, a replication study of this research to control to what extent the improvement in competencies is conducted by the mentoring program or by the practice process, with the inclusion of a control group that does not participate in the mentoring effect. On the other hand, other recommendations, at a more formative level, invite to explore the creation of formal mentoring programs that allow students of academic internships to participate in their own personal and professional development; at the level of process development, it is important to encourage and maintain mentoring in Higher Education institutions, informing of its professional and academic value.

Key words

E-mentoring, Mentoring, Internships, Higher Education, Competences

Introduction

The present research refers to mentoring at the university level. It is focused on the process of academic practices; inviting to propose stages for its implementation in the process of competent mastery of university students, leading to the reduction in the gaps within the transition of academic practice scenarios and thus reducing insecurity in students when facing new educational scenarios, new teachers, new subjects, new strategies and new classmates. All these phenomena result in an adventure laced with uncertainty for the student. From this perspective, the socio-educational environment to be experienced is unknown and consequently stressful, making it difficult for them to recover quickly and adapt to their new circumstances.

The e-mentoring program has been conceived and designed to help students in academic internship to recognize mastery of their professional competencies. As emphasized in the literature, mentoring programs typically aim to exert a positive helping role between mentors and mentees. Thus, the literature supports the idea that mentoring can help to effectively develop the capacity mentees possess to cope with the challenges associated with starting their professional careers (Singh & Kumar, 2019).

Overall, mentoring has become a fairly widespread practice to help students establish mastery of their expectations in internship situations (Martinez Figueira & Raposo Rivas, 2011). Tominaga and Kogo (2018) suggest that experienced mentors can provide mentees with guidance and support to learn new pedagogies and socialize into new professional norms.

The purpose of the applied e-mentoring program is designed to encourage students in academic internships to recognize and master their professional competencies and maintain a strong engagement connection with their peer mentors. This program, also, aims to provide sufficient support to students for the recognition of mastery and development of job skills and professional growth opportunities.

The implementation of the e-mentoring program in academic internships is necessary in order to provide their students with adequate support and professional guidance, a recognition of the real role of the educational context, a design of activities that makes its development feasible. It is necessary considering aspects such as matching between peers, diagnosis of the current situation of students, the learning design, its execution, a clear and specific monitoring and evaluation of the program.

Finally, the information obtained allowed us to reach the foundation and clear vision to systematically propose a virtual mentoring process, from its beginning to its closing, which guides the implementation of logical processes aimed at academic internship students.

1.1. Theoretical Framework

1.1.1. Higher Education and its social function

Chapter one, titled "University education and its social function," integrates the educational context, the academic training as a set of acquired knowledge, and consolidates the professional competencies necessary to perform practical processes. Successively, its characteristics are clarified, in a general way, with the purpose of connecting it to the five fundamental activities that should be established in the educational field: The role of University Formation, Methodology of University Education and organizational modalities, Distance Education and Higher Education, Academic internships scenarios and Professional competencies.

(a) The role of University Formation

The university is simultaneously an institution and an organization. According to García-García and Cotrina García (2017) it is an institution because the nature of its purpose is recognized, well-defined, associated and connected to the global plan of society, with the collective acknowledgment of validity and margin of autonomy. It is an organization because it has helpful know-how and operational usefulness and provides services to specific groups as well as to society in general (Londoño Vélez, 2017).

A new look at the role of the university in its relationship with the community must consider the transmission of scientific knowledge and at the same time advance a proposal for professional development, identifying the process of building citizenship at the center of the stage. Zabalza (2007) specified that the university is identified as one of the public spaces for the construction and exercise of citizenship, characterized by the existence of public debate and respect for differences.

A knowledge-based society implies a high demand for skilled labor, which challenges the population to learn to operate with information and knowledge. Therefore, the development of the knowledge society depends on the creation of knowledge, its dissemination through education and teaching as well as its diffusion through communication and its participation in technological innovation (García-Peñalvo, 2015).

(b) Methodology of University Education and organizational modalities

The university training methodology responds to the combination of substantive interests in education with advanced instruction in organizational modalities. University education plays a key role in developing the knowledge, skills, attitudes and values that enable people to contribute to and benefit from an inclusive and sustainable future (Clarence & McKenna, 2017). Learning to form clear and purposeful goals, work with others with different perspectives, find unexploited opportunities, and identify multiple solutions to big problems. The methodology of university education provides students with the necessary skills to use sophisticated methods to guide them in good practice and in the acquisition of policies, programs and experiences that aim to facilitate learning and mitigate educational inequality (Cano González, 2009). At this point we start from the idea of conceiving the university as a social institution of reference for the subjects who live and pass through it in their daily lives. This idea implies considering it much more than a place of construction and reproduction of knowledge, since it is also seen as a space for socialization and construction of effective citizenship, shaped as a community space. Universities are learning institutions in a fully integrated sense of the word: they impart scientific, humanistic and technical knowledge, but also cultural and civic knowledge. It is also important to recognize that universities also help to shape values, encouraging a free and committed citizen participation with the principles of democratic societies (Cano González, 2009).

(c) Distance Education and Higher Education

Distance learning (the student's activity) and distance teaching (the teacher's activity) constitute distance education (Sadera et al., 2009; García Aretio, 2018). Distance education as part of our educational system should contribute to achieve cultural integration between the university and society, work cooperatively with face-to-face education and offer a significant contribution to materialize the idea of turning a whole country into a great university (Gros & García-Peñalvo, 2016). In the context of the information society and modern educational trends, distance education faces new challenges, as it becomes a cultural training system in its relationship with society.

Within the framework of distance learning, there are variations in the methods and terminology used and different characteristics provided. Online training is a category of learning in general and an extension of the traditional form of distance education. Different terms have been used for online learning, such as e-learning, web-based learning, distance learning. According to Barberà (2008), online learning is the use of the Internet to access learning materials, and content, where the instructor and other learners provide support during the learning process. This helps the student acquire knowledge, construct personal meaning and grow from the overall learning experience.

New information and communication technologies have favored the development of distance education, providing tools that support this process (Kleisch, et al., 2017). The possibility of using the chat function, the forum for interpersonal communication and the creation of online exercises, are just some of the advantages of new technologies facilitating the exchange of learning and promoting collaborative work At present, learning networks are gaining momentum as a space that allows the interaction of individuals with common interests to share knowledge and ideas, fostering debate and group work, as well as influencing the development of professional competencies (Gros & García-Peñalvo, 2016). A learning network also offers an open space for interaction that allows the sharing of links, files and other assets that support learning and professional development.

(d) Academic internship scenarios

What do students expect when they start their internships in a new organization? There are several aspects but the most important are: to master the professional skills acquired in the classroom and put them into practice, to acquire experience to facilitate the process of job placement after graduation, a relationship with the organization that welcomes them will facilitate them to approach a first employment experience (Tejada Fernández & Ruiz Bueno, 2013; Tinoco-Giraldo et al., 2020a). These aspects offer a very different way of looking at an internship compared to only considering an internship as a way of only fulfilling the credits required to complete a curriculum.

While the structuring part of the academy, as part of its function, is to guide students to develop strategies to obtain benefits and profits; to administer and manage human, intellectual and creative resources effectively and efficiently, emphasizing the way results are achieved and the social dimension that this has; the participation of the organization as validator of a professional process participates by providing an experiential scenario, a validating and confrontational space to measure, capacity, strengths, critical and innovative attitude, and to provide a common benefit (Tinoco-Giraldo, 2018; Tinoco-Giraldo et al., 2020a).

These dimensions seek mechanisms to achieve a reflexive dynamic and integration in the curriculum of professional competences, and reflection on real situations of problematic relationships that generate effects on ethical conditions and actions involving social and professional interaction in the productive sector, as well as to evaluate and anticipate the social, ethical and productive effects derived from the actions of competition and economic stability (Silva et al., 2016).

(e) Professional competencies

In facilitating the development of adequate technical and professional competencies, universities contribute to the formation of mature, reflective and critical individuals who continue to develop and master their professional competencies over time. In so doing universities shape lifelong learners, students who are always developing their professional competencies - for the future, in the present (De Pablos Pons et al., 2016).

These competences help students to become reflective citizens capable of open and constructive criticism of the realities on which they reflect. These competencies include, among others; project management, problem solving, critical, logical and creative thinking, working autonomously, learning to learn, communicating ideas effectively and using another language and working in a team.

Professional competencies help students to increase their civic commitment and to exercise active citizenship in a responsible manner (Estrada, 2012). These competencies can be developed in Higher Education in different subjects in a theoretical and practical way. The development of professional competencies, like any other educational content, involves acquiring knowledge, arousing favorable attitudes for action, which give competencies their predictive and stable character over time, developing skills that allow them to be exercised effectively (González & Wagenaar, 2003). Knowledge, attitudes and skills are acquired and developed through teaching, guidance and training, respectively (Zabalza, 2016).

1.1.2. Mentoring as a tool for professional growth

As for the second chapter of the theoretical framework, which we called "Mentoring as a tool for professional growth", we begin with a systematic review of the bibliography with the purpose of recognizing the essential role of virtual mentoring programs in the professional development of university students, the current state of knowledge in the discipline where these programs are implemented, and the place of e-mentoring in academic and professional development processes. Afterwards, we went through mentoring, its definition, types, reasons for the implementation of a program and a summary of mentoring programs implemented in Iberoamerica and the United States.

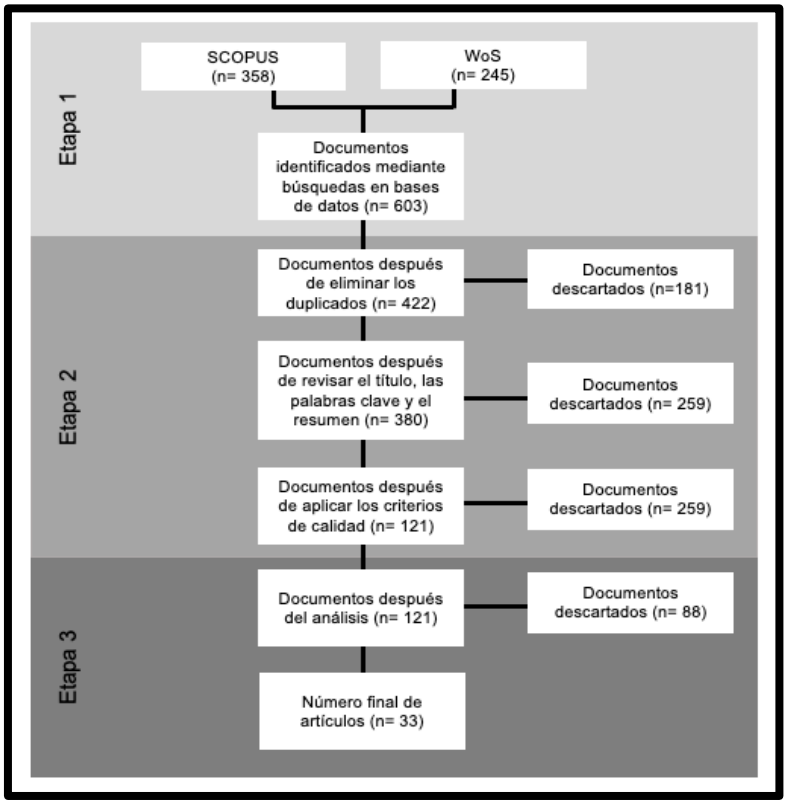
(a) Systematic Literature Review

The theoretical framework underpinning this thesis is developed in the training materials created for this purpose (Silva Quiroz, 2017) to which we refer, although the ideas that delimit and position the object of this thesis are synthesized below: the competency mastery of students in academic internship in the process of e-mentoring. The review of the literature highlights the potential of mentoring, although not without challenges, as a strategy for guidance in higher education (Tinoco-Giraldo et al., 2020b). The task of developing a bibliographic review of virtual mentoring processes involved carrying out documentary research, condensing a considerable volume of information from different and sometimes divergent - sources, establishing intertextual relationships, comparing the different positions on the problem that we recognized prior to the research and, finally, writing a coherent text that synthesized the results and conclusions.

This section of the chapter presents an overview of the literature between 2009 and 2019 of the contributions and studies carried out by experts in relation to e-mentoring programs that favor competency-based management and mentoring at university level. Arguments that allow to visualize the need for professional development of students from different academic perspectives and university logistics are highlighted. On the other hand, it recognizes the role of mentoring as an alternative to orient, guide and lead the potential of university students in different contexts (Table 1.).

Table 1.

Selection process. PRISMA Flow.



(b) Definition of mentoring

The concept of mentoring consists of an educational relationship of accompaniment and guidance that is developed between a person with more experience (mentor) and another who wishes to acquire it (mentee) (Mullen, 2016). The mentor does not only share technical and professional knowledge, but also listens, advises, inspires, challenges and supports the mentee in his or her learning journey.

In every mentoring process we will find, as mentioned above, two figures: the mentor and the mentee. The novelty of mentoring is that it does not consist of the mentor talking and the mentee listening. It is a collaborative process where communication must flow in both directions (Camacho Lizárraga, 2018).

In the first mentoring meeting, the mentor listens to the mentee to understand what his or her expectations and goals are. Then, together, the work program is established where the details of what they are going to do to achieve those goals and in how much time. This is where the mentor's expertise comes into play, guiding the mentee along the way and offering support. This practice is often very motivating, both for the mentor and the mentee. The mentor has the opportunity to put his or her knowledge to good use and the mentee learns from someone who has proven his or her experiential worth.

(c) Types of Mentoring

The term mentoring can be used to refer to a set of quite diverse educational practices, including a wide range of traits (Drouin et al., 2015). All of them, however, agree on the essential traits: they are learning experiences based on a relationship that is established between someone who knows (mentor) and someone who does not (mentoree). The following are some types and modalities:

- Traditional Mentoring: Often defined as *Formal mentoring, this approach* follows a highly structured program. Goals are established, a pre-established mentor-mentee relationship regulated by the institution is set in place and some form of strategy of evaluation/ validation of the service is usually expected. Informal *mentoring* has no predefined model, but rather mentor and mentee choose each other and also choose the rules, nature and duration of their relationship (Single & Single, 2005).
- Peer Mentoring: This model is understood as a collaborative and reflective learning relationship, established jointly between the mentee and mentee. This constructive relationship of support and challenge involves structured conversations over time to develop commitment, skills, professional growth and change in practices (Ragins & Kram, 2007). Within this peer-to-peer relationship, there may be more established roles.
- Group Mentoring: This is when the mentor supports a group of people around a common project or interest (Ensher & Murphy, 2011).
- Flash Mentoring: Consists of short, focused meetings, in which people with high prestige and experience participate and converse in an informal setting with those who approach them for advice or support (Mangan, 2012).
- E-mentoring: The relationship between the mentor and the mentee is established and sustained the use of technological and multimedia tools. The mentor shares their experience and knowledge with the person requesting their services through the use of technological elements and tools in order to develop successful personal, professional and academic knowledge (Ensher & Murphy, 2011). The central axis of e-mentoring involves communication and is based on a relationship where knowledge is transmitted to advance in a given field.

(d) Reasons for Implementing Mentoring Programs

The reasons for establishing a mentoring program should be linked to the institution's objectives. A mentoring program is structured around three factors: the culture of the institution where the program will be implemented, the metrics that flow from the identified objectives of the program, and the people needed to achieve those objectives (Fountain & Newcomer, 2016).

The reasons for establishing a mentoring program will depend on the goal's mentees want to achieve, but without forgetting the key factors outlined above On the other hand, answering the following questions can help make a decision before formalizing a program: What are the advantages of a mentoring program over another academic strategy that can be implemented; is a mentoring program an appropriate strategy for the target population; what will students or community members gain from having a mentor; and is a mentoring program an appropriate strategy for the target population? What will students or community members gain from having a mentor? After answering these questions, the next issue to consider is the type of mentoring program that should be implemented.

(e) Iberoamerican and United States Relevance of Mentoring Implementation in University Programs

In universities, mentoring is being explored in multiple ways. Mentoring is usually used as a programmed approach for the induction of students to the university, follow-up throughout their careers and final support in the process of job placement or further studies. It is also being applied to graduate students and in the

training of researchers (Crisp et al., 2017). The following cases offer a broad overview of mentoring programs in different Iberoamerican and United States universities.

- Skills Acceleration Program, Universidad de Granada, Spain: Mentoring program that recognizes students with the best GPAs and records in the university, with the purpose of increasing and developing employability and leadership skills.
- Mentoring Program, Universidad de Navarra, Spain: Specific program for international students designed to help them adapt to the new environment of the educational system where they come to experience their academic exchanges.
- Integratec, Tecnológico de Costa Rica: Mentoring program to help and accompany new students in the physical recognition of the university, and other important tasks in their first year of studies. New students are paired with older students who act as mentors.
- *Mentor Program*, Denver University, United States: This program connects students with a professor who serves as a mentor to advise them on how to succeed in college.
- Woman Sergio Up, Universidad Sergio Arboleda, Colombia: A Program entirely aimed at entrepreneurial female students, who are paired with local and national businesswomen mentors to create action plans and strengthen the entrepreneurial skills in the field.
- Mentoring EXATEC, Tecnológico de Monterrey, México: Hybrid mentoring program that allows students to connect with professionals who have graduated from the university and who want to share their knowledge and experience with students, establishing timely and appropriate strategies according to the professional needs of each mentee.

After analyzing the above information, it is recognized that, despite its importance, mentoring has not received the attention, evaluation and recognition given to other aspects of professional development, such as teaching and research. With few exceptions, academic institutions have allowed mentoring to take place organically or on an ad hoc basis.

1.2. Design of the "e-mentoring in training processes in academic internships" program and design of its evaluation process

Mentoring is a widely-recognized best practice and a powerful strategy for developing talent by encouraging mentees to take responsibility for their growth and development. Mentees have the opportunity to develop career goals, learn new skills, domain professional competencies, expand their knowledge, diversify their experience, and grow their networks with the help of a mentor. Research has also shown that mentoring can improve student capability to grow and enhance participation, while lack of students access to mentoring was first on a list of barriers to promotion and advancement (Jackson, 2015; Rocha Cáceres, 2016; Guthrie & Meriwether, 2018). Chapter three breaks down the design of the e-mentoring program, recognizing aims to reach a series of actions that are previously raised in order to design a logical and coherent program. Thus, the following are established:

- The objective of the program.
- The formal elements of the program, which include the methodology used and based on the instructional design process.
- Additional program elements and resources.
- The evaluation of the program.

The e-mentoring program was launched in 2019 as a formal facilitated mentoring program with measurable results and development goals linked to competencies designed to improve students' internship semester

experience. In this chapter we want to recognize that an e-mentoring relationship can be a powerful way to accelerate learning and increase the development of professional competencies of students in academic internships. The potential benefits of having a mentor are many (Sánchez García et al., 2011). In the context of today's digital culture access to multiple mentors is now possible through a myriad of social networks, and various professional communities can share their practices and resources with their participants. Therefore, through the use of an e-mentoring program, professional skills-based competencies can be enhanced. Reflection can be facilitated through digital communities and assessment can be provided to foster mastery of these competencies.

Through the use of e-mentoring, professional competencies and career readiness can be enhanced in an effort to assist students in fostering a successful transition from the academic environment to the workplace. Thus, the necessary domains of professional competencies have been identified when going through an academic practice and the professional roles have been recorded in students of academic internships. This domain is an explicit feature in most interprofessional competency frameworks (Arias Barranco, 2015). A dynamic e-mentoring process has also been developed to shape particular activities that nurture the values, knowledge and skills that underpin the mastery of these competencies in a practical way.

Students will find in the mentors a guide that will allow them to have more confidence, autonomy, management and access to resources, in recognition of interests and recognize competencies in relation to the area of knowledge of the program and the development of skills to strengthen their life plan. The e-mentoring program allows both the student and the mentor to live a mutual learning experience.

The general objective of the program is: *to design an effective e-mentoring program for the improvement of competencies in students of academic practice*. In order to achieve this objective, it is important to consider the following stages.

(a) Formal elements of e-mentoring program design

The development of an e-mentoring program is developed and routed by the recognition of the mentoring literature and evolves from the combination and fit with the ADDIE model (Analysis, Design, Development, Implementation and Evaluation) (Dick, 2012; Davis, 2013) which is a generic learning design process traditionally used by instructional designers and training developers. The e-mentoring program incorporates the fundamental elements of a traditional mentoring program identifying seven dimensions of competencies necessary for professional practice: Project management, Problem solving, Critical, logical and creative thinking, Working autonomously, Learning to learn, Communicating ideas effectively and using another language and Working in a team

The structure of the e-mentoring program consists of 3 key processes: 1) planning, which consists of the analysis, design and development phases; 2) implementation and 3) evaluation.

- *Planification*: Structured by a participant institution with a common organizational objective aimed at a target profile (mentees). It is a program formally designed to achieve the set objective, in which the different processes of formal Mentoring are included, among the mentors and mentees participating in it. In addition to the mentoring processes, other activities are developed within the program, such as the training of mentors, matching, group supervision sessions, complementary training, meetings and other actions, as well as the final evaluation of the program.

  According to the ADDIE model, the first thing we should do for the mentoring program to apply detailed *analysis*. The training needs analysis should be the first type of analysis we apply as it will identify whether the proposed or selected training solution – e-mentoring program, e-learning

course, a blended or a digital mentor manual, - is what is really required (Neely et al., 2017). This analysis identifies what functioning improvements are expected and how they will be measured (this is very important as this will also give the end participants a sense of the success of the solution). It may even turn out that the solution or content that was planned is not the best to help meet the identified needs.

Once we have validated the functionality requirements, it is time to analyze the profile of the learners or participants (Bamrara & Chauhan, 2018). Knowing the key demographics and basic information about the participants will help us identify the information they need to perform their activities and the best way to present it. After this, it is important to take a close look at the processes and specific tasks in which the participants will be trained, and we need to somehow measure the learning, and this is evaluated with the observable. Once we complete this analysis, we get a better idea of the who, what, where and why of this professional development solution.

The second phase is the *design*. At this level, it is important to take into consideration that the learning solution we are going to develop must align with the resources designated for its production (time, level of interactivity, budget, equipment and specialists involved). It is essential to build a map that guides us through the description of each element and stage of the mentoring program. This stage determines the learning objectives, the content, the analysis of pedagogical and communication material to be used in the exercise, the planning in the incorporation of the participants, the evaluation instruments used and the selection of media. At this stage is the participant recruitment process. A well-organized enrollment plan, will attract and help the researcher choose the most suitable people for a mentoring program. Matching process is one of the most critical steps in implementing a mentoring program (Nuankaew & Temdee, 2019). When there is no effective matching of participants, the level of success necessary to yield a return is not achieved. While there is no guarantee that a match will be successful, when a proactive approach is taken to matching participants, the likelihood of achieving success increases.

The third phase, *development,* consists of putting into action all the ideas and creative outlines carefully planned in the previous phase. All decisions made during the design phase are the guidelines for this phase. The development phase, in both cases, includes the didactic (training) training tasks, training content, coaching and mentoring community building elements of the program driven by the program objectives and target population. In this sense, the development is divided in two phases*: didactic training*, which consists of equipping mentors with the necessary information to conduct successful mentoring sessions (Maturana Castillo, 2018) and building an e-mentoring community, through scheduled meetings with their peers. These meetings provide opportunities for participants to gain additional ideas for discussion topics, allow mentors to give each other advice, and provide an opportunity for mentors to gain additional insights (Jackson et al., 2017).

- Implementation: The e-mentoring program in an academic internship training processes is implemented through a series of steps and listed below:
    - Mentor/mentee pairings are created based on compatibility of application forms or specific preferences of the participants.
    - A program orientation session is conducted virtually using e-learning resources.
    - Planned activities are carried out.
    - An acknowledgement check form is used to evaluate professional competency processes.
    - A follow-up competency mastery assessment is conducted, and the same form is sent out to recognize mastery improvements.

- An overall program evaluation is conducted with mentors and mentees.
- The final evaluation is carried out and the necessary measures are taken before starting the next program cycle.

- *Evaluation:* With the implementation of the e-mentoring program, research and evaluation is needed to identify best practices associated with the delivery of the program (Jackson et al., 2017). In this phase the program coordinator focuses on collecting and analyzing data to support the goals of refinement, scalability, and sustainability.

(b) *Additional Program Documents and Resources*

For the e-mentoring program, a set of tools have been designed for participants to identify and address specific needs in the mentoring process (Tinoco-Giraldo et al., 2019). The documents and resources designed are:

- *Program Documents:*

The following documents were provided to support the e-mentoring process with participants and to continually evaluate and improve the e-mentoring program:

- Application for participation to the program: Mentees and mentors must apply to participate in the mentoring program by completing an application and submitting it to the program coordinator for approval.
- Confidentiality agreement: Document designed to help build trust and establish clear boundaries on how the shared information should be treated, a confidentiality agreement is determined between the two.
- Consent form: With this document the mentees confirm that they agree to answer the questionnaires related to the program and to participate in the process of training, development and evaluation of the e-mentoring program.
- Mentoring agreement: It establishes how and when the mentee and mentor should meet and what means of communication should be used for their periodic meetings.
- Mentee action plan: Used to determine activities to ensure that the objectives of the mentoring process are met.
- Record of incidents or key elements of the process: This record is managed by the coordinator or supervisor (if one is available), to monitor incidents and/or activities that the participants believe are necessary to acknowledge in them.
- Biweekly evaluation of the process and development of the program: Twice a month mentees and mentors are asked to evaluate the program and the achievements they have obtained since the implementation of the program. Their input is intended to help make the necessary adjustments to ensure the program's effectiveness.

- *Program resources:*
  - Coordinator and supervisor: This role is designated in order to support the events, mentoring activities and constant communication with the participants. The purpose of having the support of a coordinator and a supervisor with the possibility of being available periodically to communicate with the participants and recognize their progress and needs within the program.
  - Template for planning activities: A format has been created for planning workshops and extracurricular support activities for participants.

- Template of suggested topics to explore with participants: A template was designed for the recognition of suggested topics to improve general mentoring techniques.
- Web page: It has been designed for the e-mentoring portal which will allow stakeholders (university institutions) to add it to the program, focus on the mentoring process through the automation and streamlining of some of the learning and communication materials developed for the program.
- Mobile application design: A mobile application (APP) has been designed for the program (Tinoco-Giraldo et al., 2020c).

(c) *Design of the program evaluation process.*

There is a very close relationship between competency learning and assessment (Driscoll et al., 2017). The assessment process itself is an important element in the development of cross-cutting competencies. That is, when we assess a student, we are telling them what is important to learn. We are guiding him/her in the learning process. Assessment has a retroactive role on learning and teaching because it identifies what needs to be modified and redesigned to meet identified learning gaps.

The evaluation process begins with the analysis of the expected results of the program and the objectives set. Subsequently, progress, achievements and effectiveness are measured against those outcomes and objectives. For this reason, it is essential to establish mentoring program objectives when the program begins, so that progress and results can be measured once the program is underway. In the case of the e-mentoring program in training processes in academic internship two types of evaluation have been established:

- *Summative evaluation*: Summative data are collected at the beginning and end of the program. Information is collected using an evaluation rubric. For this purpose, a rubric is administered to mentees at the beginning of the process and compared with the results of the same rubric at the end of the program. Similarly, at the end of the program, the same form is sent to the mentors, in order to determine and compare results with the mentees and to recognize the points of view of both participating groups. Summative data analysis allows the program coordinator to determine program variables, match them and associate them with successful program peers.
- *Formative evaluation:* In this case, two instruments are used: satisfaction survey and biweekly reports. The survey is applied at the end of the program, both to mentors and mentees, and the biweekly reports, as its name suggests, every fifteen days from the beginning to the end of the program, in this case, both to mentors and mentees. Once the responses are obtained and the evaluation metrics are proposed, the evaluation methodology is selected. To do this, we determine which types of metrics are most appropriate for quantitative data (survey results) or qualitative data (from reports).

1.3. Empirical Study

1.3.1. Methodological conception of empirical studies

The methodological design that supports this study is based on the experimental methodology (Bono Cabré, 2012), with differentiating elements for each study:

- Study 1: Pilot; The methodological process of mixed approach (quantitative-qualitative), measured pre/posttest with same collaborating group.
- Study 2: Quasi-experimental process measured again in the pre/post-test and aimed at a single sample.

The methodological strategy carried out as mentioned above, was executed from a summative evaluative perspective (to contrast the effectiveness of the program) and a formative perspective (to recognize the changes in the mentees' competencies, improvements and alternatives to improve in future programs). In both studies, intervening, independent and dependent variables were assigned to guide the process (Cramer & Howitt, 2004). The designation of the dependent, independent and control variables involved recognizing the research problem by identifying a general cause and effect and classifying these variables as independent or dependent.

In Study 1 (Pilot study), we relied on the measurement of the pre-test, which allowed us to evaluate the competency level of the mentees before the implementation of the program, using a rubric designed exclusively for this purpose. The first data obtained allowed us to evaluate the mastery that mentees believed they possessed of the professional competencies chosen for the program. The same instrument was then applied, this time to mentees and mentors (who had no prior knowledge of the students' competency level). As for Study 2, the same evaluations were carried out, using the same rubric and the same order established in the pretest only to the mentees and in the posttest to both participant groups. The variable pretest/posttest allowed us to compare the final results.

It is important to recognize that in Study 1, we considered representativeness and sample size. We started with a study population of 18 students in academic internship who were selected in a Marketing program at a Colombian university and who were assigned 18 mentors (alumni of the program), thanks to the collaboration of the university's practice coordination. In Study 2, we used samples from three universities in three different programs. The same number of mentors participated in each sample respectively.

1.3.2. Summary of Study 1: Pilot Program "E-Mentoring in internship programs". Application in a Marketing academic program in a Colombian university

Study 1 (pilot study) of this doctoral dissertation comprises the design, implementation and evaluation of an e-mentoring program aimed at students of academic internships in order to recognize the students' professional competency mastery. Pilot study begins with the recognition of the research reality in the subject of this research work, which determines the design of the research process.

After the description of the program, the research methodology is approached, highlighting its quasi-experimental pre/post-test aspect, whose object of research is to recognize the students' competences when they carry out the internship in order to verify the potentialities existing in both, linked to the mastery of the mentees' professional competences.

The purpose of the e-mentoring pilot program applied in a Colombian University is designed to encourage students in academic internships to recognize and master their professional competencies and maintain a strong engagement connection with their peer mentors. The objective of the first study is to validate an e-mentoring model to stimulate the acquisition of professional competencies in academic internship students.

The starting hypothesis is *the inclusion of academic internship students in an e-mentoring program will lead to an improvement in the acquisition of professional competencies in the workplace*. The variables for the first study are as follows:

- Dependents: Level of mastery of professional competencies by students in academic internship in the Marketing program for the University of application (self-received and/or observed).
- Independent: Pilot e-mentoring program designed.

- Intervening or control variables: some variables that may affect the dependent variable and do not depend directly on the independent variable are considered, for example: personal characteristics of the participants (gender, age, previous academic training, previous performance, motivation, and others).

For this first study, a heterogeneous sample was recruited in terms of age, gender and various indicators of the experiential situation (of the two participating groups: mentors and mentees). The mentees were made up of a total of 18 students of academic practice in the sixth semester of the Marketing program of a Colombian University, who were invited to participate in the e-mentoring pilot program, in this case, it should be noted that the study sample is made up of the entire population of students who in this semester will be in academic practice, therefore, the study sample and the population coincide (N=n=18) avoiding self-selection bias since this sample is the one that will really serve to verify the competency improvement that the program entails.

Regarding the significant differences between the pre-test/post-test results show that in this dimension after the implementation of the program, the evaluation data indicated that the mentoring relationship and the structure of the program were considered influential; some of the components of the e-mentoring pilot program were not specifically mentioned by the study participants as particularly influential, while other components were repeatedly referred to. For example, some mentees repeatedly talked about the importance of having a mentor and using key communication tools. On the other hand, other mentees reported improved relationships acquired in academic practice. Improved relationships appeared to be linked to several key components of the program, including communication with mentors.

Regarding satisfaction, which is one of the instruments used to evaluate the posttest, the results show high satisfaction in both cases, with no significant differences (n.s.=.05) measured across the dimensions that make up the scale. Once this satisfaction was confirmed, we carried out a regression study, using as criteria the purpose of the program; matching; resources used, implementation of the program, in order to check which elements, have a greater influence on satisfaction, intrinsic or extrinsic to the program.

In both cases (mentor-mentee) the relevance of the aspects intrinsic to the program that measure the level of satisfaction towards it is verified, concluding the possibility of replication, varying categories such as teaching or time.

The conclusion after the results obtained is that the program as it has been applied, seems to work adequately, therefore, it was decided to replicate it in a second experimental study under the same steps. The data collected helped the researcher to implement changes in the program while it was underway and to make the necessary improvements. The question referring to the biweekly satisfaction surveys used in Study 1 was removed, reducing it to 19 questions to be applied in Study 2. The support of a collaborator or representative from each participating institution was not used, as permissions from these entities were not granted. For communication between the coordinator and the program participants, Study 2 had no intermediaries. Three e-mails accounts were created to receive the information from each participant per institution, which made it possible to establish a more effective data management system when using the information.

1.3.3. Summary Study 2: “E-Mentoring in internship programs”. Experimental application in university degrees in Social Sciences and Health Sciences

The Study 2, a quasi-experimental study, is developed in three educational programs of three universities and corresponds to the replication of Pilot Study, after the integration of the relevant improvements and appropriate adaptations related to the analysis of its results.

The implementation of the study takes into account the possible differences in educational centers regarding the academic differentiation, to which each of the programs that served as a sample for the study are part (marketing, medicine and a degree in education).

The second study begins with a reality check in professional competencies for each of the selected samples, together with the results obtained in Study 1, which has made it possible to sustain its replication. Thus, the purpose of the program is based on the following premises:

- Results of the evaluation of the pilot program: In the case of the program under development, the information from the evaluations of the pilot program provides the necessary knowledge to clarify how the activities and processes for the application of the program should be designed in both universities.
- Improvements made to the program: Based on the information obtained in the pilot, improvements to the program processes and the operation of the program are built.
- Program Effects: The information collected helps to examine the relationship between program activities and observed consequences.

The objective of the research is to improve the commitment and competence of students in academic practice and rotating practice, to maximize their self-satisfaction, increase persistence and, ultimately, obtain a good academic result in their practical processes. The research process integrates both the hypotheses and the research objectives; variables on which the data analysis is based; instruments to collect information; the study population and the sample of participants. The collective objective is encompassed in the working hypothesis, defined as*: the inclusion of students of academic and rotating internship to an e-mentoring program, will produce an improvement in the acquisition of professional competences in the labor field.*

It is important to recognize two basic moments in connection with objectives. The first moment, and delimited by two sub-hypotheses, refers to the need to add a professional development and collaboration program as a collaborative tool for the recognition of the mentees' competency mastery in both internships: 1) as the e-mentoring program is applied to students in academic and rotating internships, there will be a better mastery of their professional competencies, and 2) the mentees' competencies are perceived by the mentors at the same levels of acquisition in which the mentees manifest to have developed them. The second moment refers to the nature of the program itself, conceived as the participants' perception of the program itself reaches adequate levels of satisfaction; moreover, no differences are established between the satisfaction of mentees and mentors.

Taking into account the hypothesis and objective mentioned in the previous paragraph, a quantitative approach methodological design was selected for the exercise with the three samples. This research design involves the collection of quantitative data, the use of pre-posttests of related groups. It aims to measure the attitudes of the target audience in response to the specific research objective (Sánchez-Gómez et al., 2018). Thus, it is important to conceptualize and operationalize the variables, in order to determine the methodological criteria, in this case, the set of intervening, dependent and independent variables is materialized in:

- Dependents: Level of mastery of professional competencies possessed by students in academic and rotating internships in the selected academic programs in the participating universities (self-received and/or observed).
- Independent: E-mentoring program implemented.
- Intervening or control variables: A control variable is any factor that is controlled or held constant during the process. In this case, for example: the personal characteristics of the participants (gender, age, previous academic training, previous performance, motivation, etc.) are included.

The second study was implemented in the course of 2019-2 in three Universities and in three different programs, the same marketing program used in the pilot study at the Colombian university (n=17), a medical program in the United States university (n=162) and a bachelor's degree program in education in another Colombian university (n=31).

The rest of the chapter integrates the results of the second study, differentiating between the purpose of the evaluation (summative and formative) for each one of the centers in which it was implemented; except for the qualitative portion that is not used in this study due to the particularities of participating institutions
As for the results, pre-test / post-test, an exploratory analysis primer is carried out, which allows you to select the most appropriate parametric or non-parametric statistical techniques in relation to your nature for each variable. Based on these results, the contrast of hypotheses between the participants was developed. The contrast of hypotheses carried out for each of the three changes (n.s. = 0.05), together with a study of the size of the effect, allows us to conclude that the program implies changes, after treatment, in the study changes in the seven professional competencies studied.

The quantitative results at this point and recognized with the study criteria, in the sample of the Marketing program, prove that the application of the e-mentoring program perceives a self-perceived competency improvement in the mentees, and it is recognized with the increase between the global averages for each competency and the improvement of the attribution levels. It is recognizable that, for the sample of students of the Marketing and Technology and Computer Science degree program, the Project Management competency had a recognizable improvement, which, in turn, was the one with the lowest average of all competencies. The same happens with the results offered by the mentees of the Medicine program, this competency, although it still has a low level of attribution possibly due to the demands of the rotational practice and the combination of skills and abilities to master this competency, also stands out with a competency improvement.

Regarding the satisfaction study, within the three samples, once satisfaction was confirmed, we carry out a normality test and a hypothesis contrast in each case and for each participant, in order to verify what elements have more influence on satisfaction, intrinsic or extrinsic to the program. In general terms, in the three samples, in the information obtained, show us similar results for the items that form part of the *Resources used for the program* and *Matching*. On the other hand, the Program Purpose indicator is the one in which the greatest differences are found. It can be concluded that there are no significant differences in the dimensions *Resources used for the program* and *Matching*. In the rest of the dimensions there are differences in some of the measurement items, but not in all of them. The three studied samples of the mentees group, in terms of satisfaction with the resources, materials and personnel of the program, considered the links designed for the program to be adequate, which allows us to determine that the participants found the academic and professional benefits that the program had designed with them in mind. In turn, the satisfaction results for the mentor group, in all three samples, suggest that they had a very positive attitude towards the e-mentoring program, results very congruent as in the study conducted by Martin and Sifers (2012), about the factors leading to mentor satisfaction with the mentoring relationship.

The results of the e-mentoring program, in this aspect, allow us to establish that adequate training to mentors was significantly associated with higher mentor satisfaction in the three samples surveyed; in particular, mentors in the Bachelor of Technology and Computer Science program who felt that they had received excellent training and were more satisfied with the relationships created with their peers.

1.4. Conclusions

The research process established through both studies has allowed recapitulating information and statistical data that have facilitated evaluating the results of the mentoring process, which has led to a set of significant conclusions in this research.

The theoretical conclusions drawn from this work are the following:

- The recognition of the research works and studies on mentoring, identified in the SLR, highlight quantitative predominance studies over mixed studies that would allow a more specific deep research of this subject.
- There is a lack of empirical data to explore the alternatives and models of mentoring in academic internships. In this sense, there is a clear research preference linked to amortizing academic and university entrance problems, which does not go deeply into the nature of mentoring, which is related to constituting knowledge that has a practical application.
- The nature of virtual or face-to-face mentoring programs are equally useful, emphasizing that they provide opportunities for integration, attunement and applicability of academic and professional knowledge essential for deep and meaningful learning experiences such as academic internships.
- Regarding the definition of mentoring itself, some imprecision stands out. Numerous definitions, especially of U.S. origin, emphasize the protection and practical assistance of the mentor; others, of European and Asian origin, see the purpose of mentoring as justified only in the relationship and the accumulation of goals achieved by the participants. To increase the validity of mentoring research, it is necessary to establish an adequate definition of mentoring and its relationship to what is being measured, while recognizing that all participants fall within the same definition.
- The e-mentoring process differs in some fundamental aspects from face-to-face mentoring. Factors such as the logistics of the process, the periodicity of meetings between peers, among others, generate a different impact between the expected results in a face-to-face program and a virtual one.

The two studies implemented conclusions drawn from this work are the following:

- The exhaustive analysis of the two studies implemented in Colombian and U.S. universities, have allowed us to identify the key steps of the e-mentoring program. Thus, as in any process of professional assistance, in mentoring, there are crucial elements on which the successful completion of the program depends, such as: the adequate training of the participants, the recruitment of mentors and the adequate matching between peers with clear and flexible criteria.
- The implementation of the first empirical study provided additional information to the body of knowledge on e-mentoring, specifically regarding the structured model to be applied in the second study and its implementation process. Applying these results and combining them with the suggestions provided by the participants during the program, the framework of the

structured model for the second study included the particularity required by each participating institution as well as an ongoing monitoring of the e-mentoring program.

- Through peer-to-peer interactions, we recorded improvements in mentees' professional competency development. The mentees demonstrated improvement when applying the e-mentoring program and discovered additional readiness regarding their learning objectives, recognized prior to practice and supported through the program and their peer mentors.
- In Studies 1 and 2, mentors also perceived growth in themselves and found satisfaction in the opportunity for help, advice and support from their peers. Peer mentors acknowledged being reflective and promoted the growth and sustainability of the e-mentoring program through their interventions with mentees.
- In both studies, the quantitative measures used to determine the impact of the e-mentoring model on the improvement of students' competency mastery showed that the applied program had a statistically significant impact on the participants. However, progress is not the same in all cases, nor in all competencies.
- The results achieved in the second study in the Education Program at the Colombian university demonstrated improvement in competencies such as Project Management and Teamwork, were characterized by high competency values possibly attributed to their own understanding of regulations and procedures as teachers, the use of methods, materials, and other resources to help solve teaching-learning problems, and personal and professional support that was able to guide mentees toward growth as a teacher through reflection, collaboration, and inquiry.
- The matching processes, in both studies, invite to reinforce the academic processes in practice and looking for alternatives that continuously accelerate the connections between peers and the use of different technological tools for communication.
- Mentoring relationships are mutually beneficial, that is, they benefit both the participants and the institutions that apply this type of program. Given the need for training in professional competencies, it is important to recognize the institutional benefits that mentoring can add, such as reduced dropout rates, greater student commitment to their institutions, and even a better institutional culture.
- A mentor can make a real difference in the professional and/or personal processes of their mentee. The mentor comes to the relationship with realistic expectations about his or her role as a guide and a willingness to work hard. The impact of a mentor's guidance and wisdom may not be felt for years, but over time the mentee will realize its positive impact and perhaps become a mentor to others.
- The e-mentoring program supports the relationships developed among peers, broadening their scope of academic learning and support, reinforcing the value placed on the learning community created by mentoring, and increasing communication efforts, competence ownership, practice direction, and social service.

1.5. Future lines of research

Mentoring programs can offer a significant impact on the academic and professional development goals of students at the Higher Education level. This Thesis recognizes that the main benefits for Higher Education Institutions with formal mentoring programs can generate greater engagement, demonstrate personal accountability and effective work habits, as well as manage the processes and impact of communication among participants. On the other hand, recognizing the impact of the COVID-19 pandemic (Viner et al., 2020; García-Peñalvo et al., 2021a; García-Peñalvo et al., 2021b), we have been forced to radically change

the way and model of learning in many institutions. The context we have explored with this Thesis has led us to reflect on a number of issues that we consider relevant to be focused on in further research:

- The future of mentoring is open and is not linked to a specific structure, it is essential to recognize the value of mentoring alternatives, such as e-mentoring, b-mentoring, micro-mentoring, circular mentoring, flash mentoring and reverse mentoring, for the development of the professional career of university students.
- To promote additional programs such as coaching, which involve the development of professional skills in a short-term peer-to-peer relationship based on the individual's potential to develop his or her weaknesses.
- Establishing a diversity-minded mentoring program is critical to creating more opportunities for ongoing engagement in Higher Education institutions. The role of mentoring is a vital component when it comes to reaching out to diverse talent in these institutions.

References

Arias Barranco, I. M. (2015). Diseño y validación de un cuestionario de escala formativa para valorar las competencias transversales de los estudiantes universitarios. Una propuesta para dispositivos móviles basada en Android. *Universitas Tarraconensis. Revista de Ciències de l'Educació*, *1*(1), 84-87. https://doi.org/10.17345/ute.2015.1.661

Bamrara, A., & Chauhan, P. (2018). Applying ADDIE model to evaluate faculty development programs. *International Journal of Smart Education and Urban Society (IJSEUS)*, *9*(2), 25-38.

Barberà, E. (2008). *Aprender e-learning*. Ediciones Paidós Ibérica.

Bono Cabré, R. (2012). *Diseños cuasi-experimentales y longitudinales*. Universitat de Barcelona Edicions.

Camacho Lizárraga, M. I. (2018). Mentoría en educación superior, la experiencia en un programa extracurricular. *Revista Electrónica de Investigación Educativa*, *20*(4), 86-99. http://dx.doi.org/10.24320/redie.2018.20.4.1999

Cano González, R. (2009). Tutoría universitaria y aprendizaje por competencias ¿Cómo lograrlo? *Revista Electrónica Interuniversitaria de Formación del Profesorado*, *28*(12-1), 181-204. http://redined.mecd.gob.es/xmlui/handle/11162/76524

Clarence, S., & McKenna, S. (2017). Developing academic literacies through understanding the nature of disciplinary knowledge. *London Review of Education*, *15*(1), 38-49. https://doi.org/10.18546/LRE.15.1.04

Cramer, D., & Howitt, D. L. (2004). The Sage dictionary of statistics: A practical resource for students in the social sciences. SAGE Publications Ltd.

Crisp, G., Baker, V. L., Griffin, K. A., Lunsford, L. G., & Pifer, M. J. (2017). Mentoring undergraduate students*. ASHE Higher Education Report, 43*(1), 86-99. https://doi.org/10.1002/aehe.20117

Davis, A. L. (2013). Using instructional design principles to develop effective information literacy instruction: The ADDIE model. *College & Research Libraries News*, *74*(4), 205-207.

De Pablos Pons, J., Colás Bravo, M. P., Conde Jiménez, J., & Reyes de Cózar, S. (2016). La competencia digital de los estudiantes de educación no universitaria: Variables predictivas. *Bordón, Revista de Pedagogía, 68*(2*)*, 7-21. https://doi.org/10.13042/Bordon.2016.48594

Dick, W. (2012). *Instructional Design: International Perspectives II: Volume I: Theory, Research, and Models: volume Ii: Solving Instructional Design Problems*. Routledge.

Driscoll, C., Price, S., McKee, M., & Nicholls, J. (2017). An assessment of sustainability integration and communication in Canadian MBA programs. *Journal of Academic Ethics*, *15*(2), 93-114. https://doi.org/10.1007/s10805-017-9275-0

Drouin, M., Stewart, J., & Van Gorder, K. (2015). Using methodological triangulation to examine the effectiveness of a mentoring program for online instructors. *Distance Education*, *36*(3), 400-418. https://doi.org/10.1080/01587919.2015.1081735

Ensher, E. A., & Murphy, S. E. (2007). E-mentoring. In B.R. Ragins & K.E. Kram (Eds.), *The handbook of mentoring at work* (pp.299-322). SAGE Publications Ltd.

Estrada, J.H. (2012). La formación por competencias y el mundo del trabajo: De la calificación a la empleabilidad. *Revista de Salud Pública*, *14*(1), 98-111. http://dx.doi.org/10.1590/S0124-00642012000700009

Fountain, J., & Newcomer, K. E. (2016). Developing and sustaining effective faculty mentoring programs. *Journal of Public Affairs Education*, *22*(4), 483-506. https://doi.org/10.1080/15236803.2016.12002262

García Aretio, L. (2018). Blended learning y la convergencia entre la educación presencial ya distancia. *RIED. Revista Iberoamericana de Educación a Distancia*, *21*(1), 9-22. http://revistas.uned.es/index.php/ried/article/view/19683/16899

García-García, M., & Cotrina García, M. J. (2017). La contribución de la universidad al desarrollo de prácticas inclusivas: Dilemas y propuestas para avanzar compartiendo. *Revista de Educación Inclusiva*, *5*(1). 123-138.

García-Peñalvo, F. J. (2015). Espirales de conocimiento, espirales de reconocimiento, espirales de amistad. *Education in the Knowledge Society*, *16*(1), 5-12. http://dx.doi.org/10.14201/eks2015161512

García-Peñalvo, F.J.; Corell, A.; Abella-García, V.; Grande-de-Prado, M. (2021a). Recommendations for Mandatory Online Assessment in Higher Education During the COVID-19 Pandemic. In *Radical Solutions for Education in a Crisis Context. COVID-19 as an Opportunity for Global Learning*, Burgos, D., Tlili, A., Tabacco, A., Eds.; Lecture Notes in Educational Technology; Springer Nature: Singapore, Singapore, 2021; pp. 85-98.

García-Peñalvo, F.J.; Corell, A.; Rivero-Ortega, R.; Rodríguez-Conde, M.J.; Rodríguez-García, N. (2021b). Impact of the COVID-19 on Higher Education: An Experience-Based Approach. In *Information Technology Trends for a Global and Interdisciplinary Research Community*, García-Peñalvo, F.J., Ed.; Advances in Human and Social Aspects of Technology (AHSAT) Book Series; IGI Global: Hershey, PA, USA, 2021; pp. 1-18.

González, J., & Wagenaar, R. (2003). *Tuning educational structures in Europe.* Universidad de Deusto.

Gros, B., & García-Peñalvo, F. J. (2016). Future trends in the design strategies and technological affordances of e-learning. In M. Spector, B.B. Lockee, & M.D. Childress (Eds.) *Learning, design and technology: An international compendium of theory, research, practice, and policy* (pp.1-23). Springer International Publishing. http://dx.doi.org/10.1007/978-3-319-17727-4_67-1

Guthrie, K. L., & Meriwether, J. L. (2018). Leadership development in digital spaces through mentoring, coaching, and advising. In L. J. Hastings, & C. Kane (Eds.) *New directions for student leadership* (pp.99-110). Wiley. https://doi.org/10.1002/yd.20291

Jackson, D. (2015) Employability skill development in work-integrated learning: Barriers and best practice. *Studies in Higher Education*, *40*(2), 350-367. https://doi.org/10.1080/03075079.2013.842221

Jackson, D., Rowbottom, D., Ferns, S., & McLaren, D. (2017). Employer understanding of work-integrated learning and the challenges of engaging in work placement opportunities. *Studies in Continuing Education*, *39*(1), 35-51. https://doi.org/10.1080/0158037X.2016.1228624

Kleisch, E., Sloan, A., & Melvin, E. (2017). Using a faculty training and development model to prepare faculty to facilitate an adaptive learning online classroom designed for adult learners. *Journal of Higher Education Theory and Practice*, *17*(7), 87-95. https://doi.org/10.33423/jhetp.v17i7.1470

Londoño Vélez, A. F. (2017). La tensión confianza/desconfianza entre lo académico y lo administrativo en la universidad. *El Ágora USB*, *17*(1), 281-287. https://doi.org/10.21500/16578031.2825

Mangan, L. (2012). The many modes of mentoring: New spins on the classic relationship. *Journal of the Academy of Nutrition and Dietetics*, *112*(9), 1320-1328. https://doi.org/10.1016/j.jand.2012.07.017

Martin, S. M., & Sifers, S. K. (2012). An evaluation of factors leading to mentor satisfaction with the mentoring relationship. *Children and Youth Services Review*, *34*(5), 940-945. https://doi.org/10.1016/j.childyouth.2012.01.025

Martínez Figueira, E., & Raposo Rivas, M. (2011). Funciones generales de la tutoría en el prácticum: Entre la realidad y el deseo en el desempeño de la acción tutorial. *Revista de Educación*, *354*(7), 155-181

Maturana Castillo, D. (2018). Las competencias requeridas en el mentor: clave para el éxito en los procesos de inducción pedagógica. *Aula*, *24*, 145-160. http://dx.doi.org/10.14201/aula201824145160

Mullen, C. A. (2016). Alternative mentoring types. *Kappa Delta Pi Record*, *52*(3), 132-136. https://doi.org/10.1080/00228958.2016.1191901

Neely, A. R., Cotton, J., & Neely, A. D. (2017). E-mentoring: A model and review of the literature. *AIS Transactions on Human-Computer Interaction*, *9*(3), 220-242.

Nuankaew, P., & Temdee, P. (2019). Matching of compatible different attributes for compatibility of members and groups. *International Journal of Mobile Learning and Organisation*, *13*(1), 4-29. https://doi.org/10.1504/IJMLO.2019.096469

Ragins, B. R., & Kram, K. E. (2007). *The handbook of mentoring at work: Theory, research, and practice*. Sage Publications.

Rocha Cáceres, R. (2016). El modelo educativo basado en competencias para la enseñanza del arte. *Educere*, *21*(66), 215-224. https://www.redalyc.org/articulo.oa?id=35649692003/

Sadera, W. A., Robertson, J., Song, L., & Midon, M. N. (2009). The role of community in online learning success. *Journal of Online Learning and Teaching*, *5*(2), 277-284. https://pdfs.semanticscholar.org/f2a6/a457ecc995758fd2fd4ecf4fd72547c52e5b.pdf

Sánchez García, M., Manzano Soto, N., Rísquez López, A., & Suárez-Ortega, M. (2011). Evaluation of a tutoring and mentoring model in distance higher education. *Revista de Educación*, (356), 719-732. http://www.revistaeducacion.mec.es/re356_30.html

Sánchez-Gómez, M. C., Martín-Cilleros, M. V., Costa, A. P., & García Peñalvo, F. J. (2018). Posicionamiento de la investigación en Ciencias Sociales. *RISTI-Revista Ibérica de Sistemas e Tecnologias de Informação*, (28), 102-113. http://dx.doi.org/10.17013/risti.28.102-113

Silva, P., Lopes, B., Costa, M., Seabra, D., Melo, A. I., Brito, E., & Paiva Dias, G. (2016). Stairway to employment? Internships in higher education. *Higher Education*, *72*(6), 703-721. https://doi.org/10.1007/s10734-015-9903-9

Silva Quiroz, J. (2017). Un modelo pedagógico virtual centrado en las e-actividades. *Revista de Educación a Distancia*, *17*(53),1-20. http://dx.doi.org/10.6018/red/53/10

Singh, P., & Kumar, K. (2019). E-mentoring alternative paradigm for entrepreneurial aptitude development. *Academy of Entrepreneurship Journal*, *25*(2), 1-12. https://www.abacademies.org/articles/ementoring-alternative-paradigm-for-entrepreneurial-aptitude-development-8067.html

Single, P. B., & Single, R. M. (2005). E-mentoring for social equity: Review of research to inform program development. *Mentoring & Tutoring: Partnership in Learning*, *13*(2), 301-320. https://doi.org/10.1080/13611260500107481

Tinoco-Giraldo, H., Torrecilla Sánchez, E. M., & García-Peñalvo, F. J. (2018, October 12). *Utilizing technological ecosystems to support graduate students in their practicum experiences* [Paper presentation] Sixth International Conference on Technological Ecosystems for Enhancing Multiculturality, Salamanca, Spain. https://doi.org/10.1145/3284179.3284344

Tinoco-Giraldo, H., Torrecilla Sánchez, E. M., & García Peñalvo, F. J. (2019, October 16-18). Development of a toolkit for a mentoring program. In *Proceedings of the Seventh International Conference on Technological Ecosystems for Enhancing Multiculturality*, León, Spain. (pp. 144-151). https://doi.org/10.1145/3362789.3362855

Tinoco Giraldo, H., Torrecilla Sánchez, E. M., & García Peñalvo, F. J. (2020a). Evaluación de la percepción de los niveles de dominio competencial en práctica laboral. *Estudios Pedagógicos (Valdivia)*, *46*(1), 127-144. http://dx.doi.org/10.4067/S0718-07052020000100127

Tinoco-Giraldo, H., Torrecilla Sánchez, E. M., & García-Peñalvo, F. J. (2020b). E-Mentoring in higher education: A structured literature review and implications for future research. *Sustainability*, *12*(11), 4344. https://doi.org/10.3390/su12114344

Tinoco-Giraldo, H., Torrecilla Sánchez, E. M., & García Peñalvo, F. J. (2020c, October 21-23). Developing a design phase for a mentoring mobile app. In *Eighth International Conference on Technological Ecosystems for Enhancing Multiculturality*, Online conference. (pp. 273-282). https://doi.org/10.1145/3434780.3436543

Tejada Fernández, J., & Ruiz Bueno, C. (2013). Significación del prácticum en la adquisición de competencias profesionales que permiten la transferencia de conocimiento a ámbitos propios de la

acción docente. *Profesorado. Revista de Curriculum y Formación de Profesorado*, *17*(3), 91-110. https://doi.org/10.5944/educXX1.12175

Tominaga, A., & Kogo, C. (2018). Attributes of good e-learning mentors according to learners. *Universal Journal of Educational Research*, *6*(8), 1777-1783. https://doi.org/10.13189/ujer.2018.060822

Viner, R.M.; Russell, S.J.; Croker, H.; Packer, J.; Ward, J.; Stansfield, C.; Mytton, O.; Bonell, C.; Booy, R. (2020) School closure and management practices during coronavirus outbreaks including COVID-19: a rapid systematic review. *The Lancet Child & Adolescent Health*, *4*, 397-404. doi:10.1016/S2352-4642(20)30095-X.

Zabalza, M. A. (2007). La didáctica universitaria. *Bordón. Revista de Pedagogía*, *59*(2), 489-510. https://recyt.fecyt.es/index.php/BORDON/article/view/36676