*DMS-DMK* publie sous licence CC-BY-SAles articles retenus à l'issue des expertises en double aveugle. Cf. *Creative Commons* *Attribution et Partage dans les mêmes conditions,* <http://creativecommons.org/licenses/by-sa/3.0/fr/>

Toute demande et tout projet sont à adresser à [dms-dmk@cned.fr](mailto:dms-dmk@cned.fr)

**ADAPTATION OF TECHNOLOGY TO IMPROVE TEACHER PRACTICES: DIDACTIC USE OF THE TRAINING PLATFORM IN HIGHER EDUCATION**

ADAPTATION DE LA TECHNOLOGIE POUR AMÉLIORER LES PRATIQUES D’ENSEIGNANTS: USAGE DIDACTIQUE DE LA PLATEFORME DE FORMATION DANS L'ENSEIGNEMENT SUPÉRIEUR

LA ADAPTACIÓN DE LA TECNOLOGÍA A LA MEJORA DE LAS PRÁCTICAS DOCENTES: USO DIDÁCTICO DE LAS PLATAFORMAS DE FORMACIÓN EN LOS ESCENARIOS UNIVERSITARIOS

**Antonio Medina-Rivilla, María Concepción Domínguez-Garrido,   
María Luz Cacheiro-González (1), María Medina-Domínguez (2)**

1. Universidad Nacional de Educación a Distancia (UNED)
2. Training Consultant, Spain

Universidad Nacional de Educación a Distancia (UNED)

School of Education

C/ Juan del Rosal, 14

28040 Madrid, Spain

**SUMMARY**

The aim of this study is to discover the incidence of use of the training platform to improve teaching and learning process in higher education. An exploratory and descriptive study with a mixed approach (quantitative and qualitative) was developed. An online questionnaire was designed with closed and open questions that has been validated by experts in distance education and applied to a pilot group obtaining values ​​of Cronbach alpha reliability between 0,61 and 0,88 considered appropriate in this type of study. Sampling was intentional, obtaining the response of 90 students from the National University of Distance Education (Universidad Nacional de Educación a Distancia, UNED) who are conducting social education, pedagogy, and master's degree in education. The results showed positive average values ​​on a scale of 1 to 6 (strongly disagree to strongly agree), the average of the scores in the different dimensions is 4 in most of the items. The answers to open questions through a SWOT analysis provide guidelines for improving the use of the training platform by teachers.

**Key words**: ICT, Teacher Training, Training Platform, Higher Education, Distance Education, Instructional Design.

**RÉSUMÉ**

Le but de cette étude est de découvrir l'incidence de l'utilisation de la plate-forme de formation pour améliorer l'enseignement et l'apprentissage dans l'enseignement supérieur. Une étude exploratoire et descriptive avec une approche mixte (quantitative et qualitative) a etait développé. Un questionnaire en ligne a été conçu avec des questions fermées et ouvertes qui a été validé par des experts dans l'enseignement à distance et appliquées à un groupe pilote d'obtenir des valeurs de fiabilité alpha Cronbach entre 0,61 et 0,88 jugé approprié dans ce type d'étude. L'échantillonnage était intentionnel, la réponse a été de 90 étudiants de l'Université Nationale d'Enseignement à Distance (Universidad Nacional de Educación a Distancia, UNED) qui mènent l'éducation sociale, la pédagogie et une maîtrise en éducation. Les résultats ont montré des valeurs moyennes positives sur une échelle de 1 à 6 (fortement en désaccord à fortement d'accord), la moyenne des scores dans les différentes dimensions est 4 dans la plupart des questions. Les réponses aux questions ouvertes à travers une analyse SWOT fournissent des lignes directrices pour améliorer l'utilisation de la plateforme de formation par les enseignants.

**Mots clés**: TIC, la formation des enseignants, la plateforme de formation, l'enseignement supérieur, éducation à distance, design pédagogique.

**RESUMEN**

El objetivo nuclear del trabajo es descubrir la incidencia del uso de la plataforma de formación en la mejora de los procesos enseñanza-aprendizaje en educación superior. Para ello se diseñado un estudio exploratorio y descriptivo con un enfoque mixto (cuantitativo y cualitativo) y se ha elaborado un cuestionario online con preguntas cerradas y abiertas que ha sido validado por expertos en educación a distancia y aplicado a un grupo piloto obteniendo unos valores de fiabilidad alfa de Cronbach entre 0,61 y 0,88 considerado adecuados en este tipo de estudios. El muestreo ha sido intencional, obteniendo la respuesta de 90 estudiantes de la Universidad Nacional de Educación a Distancia (UNED) que se encuentran realizando titulaciones de educación social, pedagogía y máster en educación. Los resultados presentan unos valores medios positivos en una escala de 1 a 6 (totalmente en desacuerdo a totalmente de acuerdo), siendo la media de las puntuaciones en las distintas dimensiones superior a 4 en la mayoría de los ítems. Las respuestas a las preguntas abiertas a través de un análisis DAFO ofrecen pautas para la mejora del uso de la plataforma de formación por parte del profesorado.

**Palabras clave**: TIC, formación del profesorado, plataforma de formación, educación superior, educación a distancia, diseño pedagógico.

1. **INTRODUCTION**

The impact of information technology and communication (ICT) in the knowledge society is producing a permanent revolution in education and particularly in the practice of the teaching function, to the point of reinventing, in its many forms of presentation of training content, structure and especially the spatiotemporal and organizational access to knowledge on the horizon of the 2020 scenario.

The task of teaching focuses on identifying the educational potential of technology and critically assume a transformative role, harmonizer and designer of teaching materials, consistent with the teaching and the demands of the future profession.

The teaching task is to search among the diversity of ICT within education (Mishra and Koehler, 2006; Puentedura, 2014), assessing its possibilities and limitations, acting as creative coach of the most relevant in their field of professional action and future scenarios in which it must act as a leader and knowledge generator.

The plurality of ICTs provides fertile teachers opportunities to investigate, select and adapt these resources (Cacheiro, 2011) to the teaching and learning styles by offering an integrated media that optimizes communication model, motivate students and provide them a wide range of learning options, consistent with the styles of understanding and interpretation of the disciplines and transdisciplinary matters.

Higher education, by the maturity of students, offers each person the plurality of resources at your fingertips, making them the real protagonists and managers of their life and professional project, involving them in identifying, understanding and proper use of the most valuable ICT media and adapted to their way of being and process information.

The plurality of resources invites students and teachers to share opportunities and risks to such ICT media and use them in a new way of making decisions in the pursuit of knowledge to the professional future of teachers and students.

The incorporation of educational platforms in distance education must be adapted to the knowledge and practices of virtual environments (e-Learning and b-Learning) to promote the learning of students, interaction with teachers and the use of new tools socio-professional.

In this study we question ¿Is designed with adequate rigor employment and adaptation of the training platform to facilitate student learning at a distance? Have we developed models that promote the educational use of the platform to improve distance education? What methodological process encourages a creative and intelligent use of each of the tools offered training platforms design?

1. **OBJETIVES**

The nuclear work aims to explore the impact of using the training platform in improving teaching and learning processes in higher education.

The specific objectives of the research were:

* To Know the role of the training platform by distance education students.
* To identify the use of training platform tools.
* To analyze the didactic interaction through the training platform.
* To propose keys to instructional design of the components of the training platform.

1. **USE OF ICT TO IMPROVE THE TEACHER ROLE AT THE UNIVERSITY**

Higher education is immersing in a transition to a mediated society and volatility of professions and occupations in an interdependent world and in continuous crisis. We have to raise the use of teaching resources, by university teachers facing the challenges of 2020 Horizon, consistent with the demands imposed by almost two decades of the XXI century.

Teachers must select, adopt and adjust ICT and its constantly changing the essence of his task: to develop educational processes in innovation and continuing research, making his teaching activities in a process based improvement and openness to permanent change, rediscovering the most valuable in the world of academia, and continuous improvement of each person.

Consistent with other educational innovations in distance education and application of tecnopedagogical models like the TPACK (Mishra and Koehler, 2006) and SAMR (Puentedura, 2014), it is required to relocate the pedagogical and didactic knowledge to make decisions that incorporate the use of ICT in an authentic formative process of each student and institution.

Research from Prendes & Gutierrez (2013), ITU-UNESCO (2014), and Farfan, Medina & Cacheiro (2015), among others, consider that ICT should promote interactivity favoring forms of communication characteristics of knowledge society. Teachers and students have a plurality of information, collaboration and learning resources (apps, edublogs, social networking, websites, MOOC, ...) (Cacheiro, 2011; Brazuelo & Cacheiro, 2015) that require extensive form of using them in co-involvement with the real protagonists, prosumers now.

How to act to find a horizon of synthesis between innovation and research teaching and search and retrieval of the true meaning of teaching in the university?

The answer is complex and requires converting the teaching task in a process at a time of innovation-research constantly evolving and deepen the characteristics of a fruitful teaching taking into consideration the most important values of the of Higher Education Institutions.

The search for this synthesis processes of teaching quality is made explicit in a model that produced Garrison & Anderson (2005, p. 52) to analyze the interaction that takes place in the training events, evaluating three types of presences in such educational actions between teachers and students (Table 1).

Tabla 1. Interaction in educational actions (Garrison & Anderson, 2005)

|  |  |  |
| --- | --- | --- |
| Elements | Categories | Indicators |
| Cognitive presence | Triggering event:   * Exploration. * Integration. * Resolution. | * Feeling of perplexity. * Exchange of information. * Association of ideas. |
| Social presence | * Affective dimension. * Open communication. * Cohesion of the group. | * Expressing emotions. * Express themselves freely. * Promote cooperation. |
| Teaching presence | * Design and organization. * Discursive elaboration. * Explicit guidance. | * Establish the program content and methodology. * Construct meaning together. * Focus the debate. |

Teaching must take advantage of virtual environments and adapting the discourse of the classroom to the uniqueness of all virtual environments complexity. For this, requires selecting the substantive of teacher presence, supplemented by the specific social and cognitive, involving teachers in a transformation, adaptation and continuous improvement style.

Conner (2013) highlights the plurality of contexts and diversity of ways of learning that occur in the knowledge society from formal to informal, from intentional to unexpected, which are represented in the following diagram (Figure 3).

Figure 3. Ways to learn in the Knowledge Society (Based on Conner, 2013)

These new learning environments must have: quality, certification and affordability, which is based on the rigor of institutions.

Johnson, Adams, Cummins, Estrada, Freeman & Hall (2016) state that educational institutions and particularly university in the today world combine classroom and online courses. Mirriahi, Alonso, McIntyre, Kilobyte & Fox (2015) principles and implications to consider for the design of effective online learning programs (Table 2).

Table 2. Principles in designing online programs (Based on Mirriahi et al., 2015)

|  |  |
| --- | --- |
| Principle | Implications for design |
| Active engagement. | The teaching staff can engage in an active process and become aware of new ideas or experiences. |
| Extract of the practice and the previous knowledge in authentic environments. | The teaching staff has the opportunity to reflect and draw from their own practice, their work and their colleagues the most valuable. |
| Understanding expectations. | Program facilitators present and provide new guidelines for action. |
| Respect and satisfaction with the diverse apprentices. | The program models influence learning environments where staff feel valued and respected. |

The use of online systems in universities must be supported by the authorities of the institution and recognized the efforts undertaken by the faculty. Mirriahi et al. (2015) are questioning that learning online teaching must take into account the principles of flexibility, b-learning modeling and flipped classroom, inclusivity, scalability, efficiency and cost-effectiveness.

The development of programs to improve the teacher practices have to meet the criteria of effectiveness of online learning and integrated professional development, involving every teacher in the case study that forms the basis of personalized learning.

1. **DIDACTIC USE OF EDUCATIONAL PLATFORMS AT THE UNIVERSITY**

The training platform is a way of structuring the instruction that fosters optimal organization of messages and the most appropriate intervention with students, but we question whether the use of the platform responds to a didactic model characterizing teaching-learning processes.

The educational use of the platform has to opt for the flexibility of training tasks, self-assessment, and open and situated learning.

One of the types of training, which are based on the use of platforms are MOOC courses (Cabero, Llorente & Vazquez, 2014) characterized by:

* Openness to learn throughout life and lifelong learning.
* Open learning, b-learning and situated.
* Independent certification of classical universities.

Training platforms have been presented as virtual scenarios that promote educational innovation and professional development (Prendes & Gutierrez, 2013, Sáez, Domínguez, Ruiz & Belando, 2014), more focused on the model of educational personalization characteristic of cMOOC, with emphasis on cooperation, self-learning, and generation of creative skills.

In this line of design and training practices improvement in university students supported by platforms, Benedetti (2015, p. 174) presents a map to know the student’s navigation processes, following the cognitive style to understand and take better decisions to advance in the domain of the course (Table 3).

Table 3. Processes navigation students (Based on Benedetti, 2015)

|  |  |
| --- | --- |
| Process | Description |
| Understanding | * Overview of the course structure. * All parts / areas of the course are visible. |
| Instructional | * Organization logical course. * Easy access to components of the course. |
| Functional | * The course links operate correctly. * The course content levels are accurate. |

It is intended that the course design on the platform is accessible, understandable, intuitive and that students understand and properly use links and possible scenarios that must work and interact with faculty and all participants. The teaching-learning process mediated by training platform includes substantial diversity of educational components to the communicative act (Figure 1).

Figure 1. Communicative act in the teaching-learning process

Huber (2008), Wegerif (2007), Medina, Sánchez and Campos (2014), Medina and Dominguez (2015a, 2015b), and Medina, Cacheiro & Medina-Medina (2015) have stressed the value of communicative competence of teachers and impact on the development of educational processes, making progress in achieving a fully teaching style to harmonize the instructive-creative design, to be worked on and from virtual environments.

The most important platforms communication features include forums, chat and webconference.

* *Forums*. Virtual scenarios for comments, reflections between teachers and students in asynchronous mode.
* *Chat*. Written speech involving a group of students and teachers in synchronous mode.
* *Webconference*. Synthesizes the keys of oral discourse, being a presentation of a scientific core with integrating sense, or integrate a lesson / presentation organized and motivating, supported on transparencies, pictures, video tutorials, etc., expanded with questions, and comments from teacher and students.

The use of these platform resources, encourages the creation, recording and maximum availability of all components of a classic didactic scenario (Figure 2).

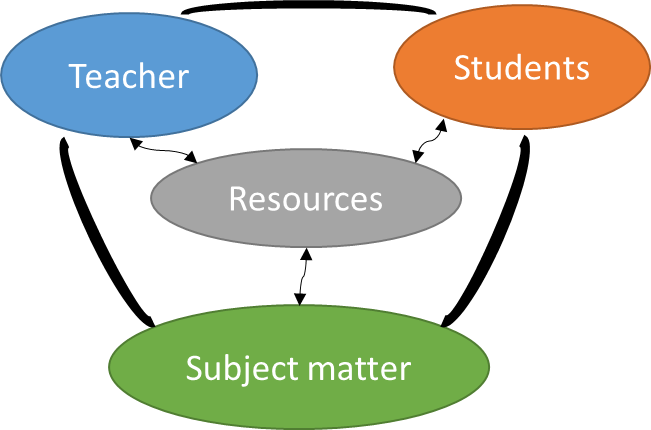


Figure 2. Components of the ICT training scenario.

The interaction between the various components is essential to promote a mediated learning. The classroom opens to a new stage, which exceeds the space-time to motivate and make available to students, colleagues and various groups, a set of instructional options, before reduced to a physical classroom.

Training platforms seek to exploit the most valuable aspects of the training scenarios to become open spaces to the intellectual and emotional enjoyment of all people, who taking advantage of these new resources can access and share them.

In the full democratization of knowledge, it is necessary to promote new interactive styles and an authentic situated, open and ubiquus learning. If such resources are shared by universities could be offered to open mode, with the appropriate tutorial advice, which makes possible the purpose of higher education.

However, we question: Has achieved a true community of learners-teacher’s university partners to improve ways of teaching and learning?

The use of the platforms in the formative process has been carried out as presentation of knowledge proposal most closely linked to options of data organization than accommodation and adaptation of such technology to a teaching model of innovative, research and creative-reflective teachers. Consequently, university teachers require new decision-making to enable them to incorporate the platform as part of a teaching model, which requires an appropriate methodology and design tasks. It demands a real awareness of university teachers, to facilitate the construction of the most valuable and relevant teaching-learning processes and from them to build a quality higher education for students.

Among the models that have been established to promote student learning, through the platforms, it stands out: case study, essential in Faculties of Medicine, Law, Education (social sciences in general), complete with learning based on problems (characteristic of Engineering, Mathematics, Physics, etc.), which have underlined the value of mathematical symbolization questions and to understand the many complex situations both social practices, such as scientific artifacts and renewed challenges of the evolved society and the demands of the principle of lifelong learning.

New methods and highly customized tasks are necessary to promote student’s innovative and inquiring learning conducive to integration and training to the changing challenges of work scenarios, both global pressure and interdependence and the intensity and permanent mutation of the diversity of uses and impact of ICT resources and environments.

The design of the training situated program in and beyond platforms in complementarity with traditional learning materials and classroom performance teaching practices, poses teachers a complex answer. In this line are the results obtained by Oproiu (2015) on student interest presented by having complementary materials through the training platform.

What role is being expected of university teachers face the challenge of ICT in continuous change and from changing and divergent choices?

We need not only appropriate teaching models to the educational use of educational platforms, but the big challenge is to respond to the need of new designs and educational practices in universities supported by ICT, optimizing the possibilities of communication tools, from the forum to chat, and adapting content presentation to the virtual support.

1. **METHODOLOGY**

The methodological approach used to meet the objectives of the research is integrated quantitative-qualitative (Valles, 1997) through a transversal design (Cea, 1996) exploratory with a descriptive scope that "seeks to specify properties, characteristics and important features of the phenomenon under analysis" (Hernandez-Sampieri et al. 2010, p. 80) and provide a basis for an appropriate solution to the problem of study (Río, 2005).

Has sought objectivity and quality of data through a non-probability, incidental sampling of students from the UNED (n=90) found using the aLF training platform in graduate and postgraduate of the School of Education in which researchers participate as teaching staff.

In the process of questionnaire design has been worked content validity through consultation with expert judges, doctors in the field of distance education, who have reviewed the clarity, adequacy and internal consistency of the items based on their experience (Garcia-Llamas, Galán and González-Ballesteros, 2001). It has also analyzed the reliability through Cronbach's alpha internal consistency coefficient obtaining between 0.60 and 0.80 in different dimensions, considered suitable for studies exploratory and descriptive. The questionnaire was made through the google drive form and data analysis with SPSS 22 version.

The methodological rigor applied is in line with the proposals of Anderson (1990) and Garcia-Cabrero (2009) through the analysis of quantitative and qualitative data obtained through the questionnaire that allowed to know the experiences of the participants on the use training platform. Meanwhile, content analysis has deepened in the experiences expressed by participants in the open questions, avoiding premature judgments (Gürtler & Huber, 2007). Triangulation of the most representative results of closed and open questions is a contribution to the replicability of the study, in line with the contributions of Reichardt & Cook (1986).

1. **RESULTS**

**6.1. Characterization of the study sample**

The participant sample has been made by 90 students of the UNED using the aLF training platform, being 21% men and 79% women, with an average age of 34, ranging from 19 to 52 years old.

Respondents are mainly pursuing a Master's degree (59%), otherwise the degree of Social Education (29%), and fewer of Education (8%) and other studies (4%). These students have used the platform an average of 2 years, specifically for 1 year (41%), 2 years (19%), 3 years (20%) and more than 4 years (20%), with a periodicity of consultation that goes from daily (48%), weekly (45%), biweekly (4%) and monthly (3%). In addition to the training platform, students demonstrate use external tools communication with other students, such as Facebook (52%), whatsapp groups (39%), google + (9%), twitter (8%), and some add Skype, wikispaces, google drive, etc.

The average years of professional experience in education of the group is 4, being 1-4 years (33%), 5-10 years (26%), more than 10 years (19%), and some inexperienced (22%).

The educational level that are involved professionally the participants is diverse, both formal: child (8%), primary (19%), secondary (11%), vocational training (12%), university (22%); and non-formal (23%): adults, associations, foundations, etc.

**6.2. Results of the questionnaire dimensions**

The opinion scale used has the values 1 to 6 (1 = strongly disagree, 2 = quite disagree, 3 = somewhat disagree, 4 = somewhat agree, 5 = quite agree and 6 = strongly agree). In the analysis the average value obtained in the item on the scale is provided, and to facilitate interpretation have been grouped the results of the optiions 1,2,3 (disagree) and 4,5,6 (agreement) for each dimension of the questionnaire.

*Dimension I. Role of training platform in distance education*

In this dimension there are 9 items related different aspects the role of training platform: motivation, availability of course materials, promote independent learning, use by teachers, efforts to locate relevant information, complementarity classic materials, critical thinking, interaction between agents of the course and its role in distance education. The average value of the items is positioned between 4.01 and 4.82, except for item 14 which is 3.84. (Figure 1).

Figure 1. Dimension I. Role of the training platform in distance education. Grouped Ratings: disagreement (1-2-3) and agreement (4-5-6) (Percentage)

Students overwhelmingly agree that the training platform "promotes independent learning" (item 13, mean=4.36, agreement=83.4%), "complements the classic materials" (item 16, mean=4.26, according=81.1%) and "facilitates the availability of course materials" (item 12, mean=4.22, according=80%).

In the open question within this dimension students have demonstrated strengths: faculty feedback, exchange of students, independent learning and availability of course materials. Some comments are:

When properly used by the teaching staff it is of great help to answer questions at exam time due to teacher-student feedback. There are teachers who respond brilliantly to doubts and empathy that every student needs. [E39].

*Cuando está bien empleada por el equipo docente es de gran ayuda para resolver dudas en época de exámenes debido al feedback de profesores-alumnado. Hay docentes que responden de forma brillante a las dudas y con la empatía que todo alumno necesita*. [E39].

Being able to interact and share experiences all students is very motivating. It is also an important element that facilitates the learning subject material. [E60]

*El hecho de poder interactuar y compartir experiencias todos los estudiantes es muy motivador. También es un elemento importante que facilita el material didáctico de la asignatura.* [E60]

Aid to study and autonomous management information, as it cannot be otherwise in a virtual and distance environment. [E77]

*Ayuda al estudio y gestión de información autónomo, como no puede ser de otra forma en un ámbito virtual y a distancia.* [E77]

It provides basic information (subject guide, manual and other materials) to study subjects and allows exposure of questions and comments from peers. [E83]

*Proporciona la información básica (guía de la asignatura, manual y otros materiales) para cursar las asignaturas y permite la exposición de dudas y comentarios por parte de los compañeros*. [E83]

In this dimension students have shown weaknesses: under-utilization of the platform as a mere content repository and the delay in responding to the forums. Some comments are:

They are used only to deposit materials and do not promote communication among students, though the platform has those resources. [E17]

*Se utilizan solo para depositar materiales y no promueven la comunicación entre los alumnos, aunque la plataforma tenga esos recursos.* [E17]

Forums holdings are long texts that don’t incite debate, beyond doubts about when to present the work. The materials are usually books, so don’t promote link to related materials. [E72]

*En los foros las participaciones son de largos textos que no incitan al debate, más allá de las dudas sobre cuándo hay que presentar los trabajos. Los materiales suelen ser libros, por lo que no se incita a enlazar materiales relacionados*. [E72]

More spontaneous interaction and quick responses is missing. Missing more extensive questionnaires for independent learning. [E25].

*Falta interacción y respuestas más espontáneas y rápidas. Faltan cuestionarios más extensos para el aprendizaje autónomo*. [E25].

*Dimension II. Instructional design training platform*

In this dimension there are 11 items organized into two thematic blocks. In a first block (items 22-26) is analyzed: tutorial, contents, supporting documents, tasks, and self-evaluation activities. The average value in the different items ranges between 4.08 and 4.38. (Figure 2).

Figure 2. Dimension Y. Instructional Design Training Platform (Block I: items 22-26). Grouped Ratings: disagreement (1-2-3) and agreement (4-5-6) (Percentage)

Stresses the importance given to the supplementary documents (item 24, 83.4%), the tutorial (item 22, mean=4.38, agreement=82.2%) and tasks (item 25, mean=4 36, according=80.1%).

In a second block (items 27-32) of this dimension, communication tools of the platform (forum, chat, and webconference) are analyzed. The average value is between 3.79 and 4.57.

Figure 3. Dimension II. Instructional Design Training Platform (Block I: items 27-32). Grouped Ratings: disagreement (1-2-3) and agreement (4-5-6) (Percentage)

Stresses the importance given to feedback to tasks (item 31, mean = 4.57, agreement=85.6%) and student forum (item 28, mean=4.16, agreement=75.5%). For its part, the item on student participation in educational innovation projects gets most valuation agreement (88.9%). The lowest score is the chat to answer questions (item 29, mean=3.79, disagree=28.9%).

In the open question within this dimension students are asked to describe and justify the components of the training platform that have made it more educational value to their learning. Among the responses it highlighted the importance of: study guides, peer learning through the forum, and resolving doubts through webconference. Some comments are:

The study guides have been those that have helped me manage my self-learning, I've consulted every time I went to work in a subject and to guide my work and be effective in the dedicated effort. [E72]

*Las guías didácticas han sido las que me han ayudado a manejar mi autoaprendizaje, las he consultado cada vez que me ponía a trabajar en una asignatura para así orientar mi trabajo y ser efectiva en el esfuerzo dedicado. [E72]*

I appreciate the forums within each subject because allows interaction of students. Each can contribute his views and experience in the subject matter. In my opinion this enriches my learning a lot. [E22]

*Valoro mucho los foros dentro de cada asignatura ya que permite la interacción de los alumnos. Cada uno puede aportar su punto de vista y su experiencia en la materia tratada. A mí juicio eso enriquece mucho mi aprendizaje. [E22]*

Forums, be able to interact and help my teammates and communicate with my teachers. I love forums and actively participate in them, not to solve my doubts, but to help colleagues who have more difficulties than me. [E42]

*Los foros, el poder interaccionar y ayudar a mis compañeros en el y comunicarme con mis profesores. Me encantan los foros y participar activamente en ellos, no para resolver mis dudas, sino para ayudar a compañeros que tienen más dificultades que yo. [E42]*

Webconference as the students' questions are answered at the time, and you know questions or contributions from other students. [E70]

*Webconferencia ya que las preguntas de los alumnos se contestaban en el momento, y te enterabas de dudas o aportaciones de otros alumnos. [E70]*

In the open question about whether you add any new reflection to improve teaching platform design? have been identified proposals in relation to design navigation menus, uniformity in the design of the courses, and the possibility of perform group work. Some comments are:

Improve the user experience in access to menus, you have not come and go when you want to change the field to work. [E03]

*Mejorar la experiencia de usuario en cuanto al acceso a los menús, que no haya que salir y entrar cuando se quiera cambiar de materia a trabajar. [E03]*

A uniform format for all courses greatly facilitates the students work, while providing an orderly educational structure. [E27]

*Un formato uniforme de todos los cursos facilitaría en gran medida el trabajo del alumnado, proporcionándole a la vez, una estructura didáctica ordenada. [E27]*

Group work to be carried out using other tools. [E90]

*Que se realizarán trabajos grupales utilizando otras herramientas. [E90]*

*Dimension III. didactic interaction through the platform*

In this dimension there are 6 items on aspects that contribute to didactic interaction. The average value ranges between 3.83 and 4.52. (Figure 4).

Figure 4. Dimension III. didactic interaction through the platform. Grouped Ratings: disagreement (1-2-3) and agreement (4-5-6) (Percentage)

The item with a higher assessment is that "the training platform has introduced a new culture in the process of distance learning" (item 35, mean=4.52, agreement=87.6%), and the lowest degree of agreement is the use of the training platform by teachers to meet the needs of distance education (item 36, mean=3.83, disagree=34.4%).

In the open question for this dimension students are invited to narrate the main tasks that teachers carried out to improve the educational interaction through the training platform. In this sense their comments focus on: avoid abandonment, promote dialogue and raise interactive activities. Some comments are:

You need to create a classroom environment, although the modality was at distance. Otherwise the dropout rate increases significantly. [E27]

*Es necesario crear un ambiente de clase, aunque la modalidad sea a distancia. En caso contrario el índice de abandono se incrementa notablemente. [E27]*

Having a fluid "dialogue" with students through forum posts, etc. [E42]

*Tener un "diálogo" fluido con los discentes a través de los mensajes del foro, etc. [E42]*

Propose interactive activities through the forum and send questions about any text or reading in order to share views and respond to them among students. [E71]

*Proponer actividades interactivas a través del foro y lanzar preguntas acerca de algún texto o lectura con el fin de compartir opiniones y responder a las mismas entre alumnado. [E71]*

*Dimension IV. The platform training and professional practice*

In this dimension there are 6 items on aspects that contribute to this practice and / or future. The average value ranges between 3.58 and 5.09. (Figure 5).

Figure 5. Dimension IV. The platform training and professional practice. Grouped Ratings: disagreement (1-2-3) and agreement (4-5-6) (Percentage)

Items with a higher degree of agreement are that "the training platform is an essential educational resource in distance education" (item 48, mean=5.09, agreement=94.5%), and "combined with relevance using the platform with classic materials "(item 47, mean=4.17, agreement=84.4%). The item lesser degree of agreement is that "through the training platform links with other students for future projects are favored" (item 44, mean=3.58, disagree=49.9%).

The last two open questions of the questionnaire respondents are asked to describe and justify the opportunities and threats of the training platform based on the use made of it.

Among the opportunities arising from proper use note: interactivity, access to higher education, training, knowledge sharing and creation of a virtual learning community. Some comments are:

Interactivity, as knowledge is shared through forums among students and teachers. [E03]

*Interactividad, ya que se comparte conocimiento a través de los foros entre los estudiantes y los profesores. [E03]*

Access to training processes of people who, by personal, work, family, etc. circumstances, could not access training activities. [E06]

*Acceso a procesos formativos de personas que, por circunstancias personales, laborales, familiares, etc., no podrían acceder a acciones formativas. [E06]*

Continue professional training from anywhere in the world. [E56]

*Continuar la formación profesional desde cualquier lugar del mundo. [E56]*

Appropriate use of the training platform opens a new world of opportunities both classroom training, and distance. It also contributes to the new teaching models to promote active student participation in their training. [E27]

*Un uso adecuado de la plataforma de formación abre un nuevo mundo de oportunidades tanto a la formación presencial, como a distancia. Además, contribuye a los nuevos modelos didácticos al promover la participación activa del estudiante en su formación. [E27]*

The well-used and encouraged platform by the faculty can give us a very useful asynchronously learning using teachers and student’s resources who wish to contribute with knowledge gained or links of interest to other colleagues. [E39]

*La plataforma bien usada y fomentada por el equipo docente puede darnos una gran utilidad para aprender de forma asíncrona con recursos del profesorado y de los alumnos que deseen aportar los conocimientos adquiridos o enlaces de interés para el resto de compañeros. [E39]*

Feeling member of a virtual community of learning. Meet "virtually" companions from other places and even make virtual friendships that endure over time. [E42]

*Sentirse miembro de una Comunidad virtual de aprendizaje. Conocer "virtualmente" a compañeros de otros lugares e incluso hacer amistades virtuales que perduren en el tiempo. [E42]*

Among the threats arising from misuse participants say: lack of motivation, neglect, mismanagement forum posting, personal promotion, knowing the profile of other participants. Thus they manifest:

The biggest threat is not get motivated to go ahead with the studies. [E20]

*La mayor amenaza es no sentirse motivado para seguir adelante con los estudios. [E20]*

Improper use of the platform can result in a large drop formation by the students, especially in the form of distance learning. [E27]

*Un uso inadecuado de la plataforma puede derivar en un gran abandono de la formación por parte del alumnado, sobre todo en la modalidad de formación a distancia. [E27]*

Too much informative noise in the messages. [E43]

*Demasiado ruido informativo en los mensajes. [E43]*

I believe that everyone who entered the virtual training are mature and responsible enough to give an excellent use of this resource that becomes the only opportunity for improvement for some people. [E53]

*Considero que todas las personas que ingresamos a la formación virtual somos lo suficientemente maduros y responsables, para dar un uso excelente a este recurso que se convierte en la única oportunidad de superación para algunas personas. [E53]*

It is used only as a guide’s repository and where submit homework. I think that should facilitate the relationship among students to promote collaboration. [E72]

*Ser utilizado solo como un repositorio de guías y donde entregar las tareas. Creo que debería facilitar esa relación entre estudiantes para promover la colaboración. [E72]*

When there is a lack of appropriate strategies for the use and management of new information technologies in people who, like me, were born during the 60s and are at a disadvantage with other more competent younger students digital natives and the use of what relates technologies. [E77]

*Cuando se carece de las estrategias adecuadas para el uso y gestión de las nuevas tecnologías de la información, en personas que, como yo, hemos nacido durante los años 60 y estamos en desventaja con el resto de estudiantes más jóvenes nativos digitales y más competentes en lo que al uso de las tecnologías se refiere. [E77]*

1. **CONCLUSIONS AND DISCUSSION**

The main conclusions of the study are organized according to the research objectives.

In relation to the objective "To Know the role of the training platform by distance education students" it is considered a means to manage the basic elements of the course: content, activities and evaluation through independent and self-regulated learning, enabling communication with faculty and peers. In this regard it is suggested by study participants improve response time to questions raised in the forum, and to propose topics for discussion.

In relation to the objective "To identify the use of training platform tools” is considered to provide the necessary to carry out the training process, being the forum, chat and webconference which centralizes the communication process. In this regard the participants are positive about the use of webconference to answer questions, as well as the possibility to review later. It is suggested the creation of videotutorials to facilitate the work with the contents (Pérez-Ship, Rodriguez & Carmona, 2015; Pérez-Navío, Rodríguez. & Carmona, 2015). The use of synchronous communication tools (chat and webconference) provide, following Falloon (2011), the possibility of a better knowledge of the participants resulting in online discussions.

The analysis of open questions raises the need for an educational model that optimizes the possibilities of working the transdisciplinary knowledge, through a creative and rational use of the basic tools of the training platform (forums, chat and webconference), combined with other tools external and social networks or web 2.0, students manifest also consult the platform.

In relation to the objective "To analyze the didactic interaction through the training platform" it emphasizes the importance of proper use of this scenario to become familiar with the new culture of distance learning processes. From the experience of participants stress the need to enrich the courses with guided discussions aimed to create situations of dialogue and exchange. As Alobiedat & Saraierh (2010) and Maita & Navea (2014) point out the platform is considered by students as a means to improve the interaction between students and teachers, both bilateral and multilateral. In this regard it is important to promote a scenario that facilitates the creation of social and collaborative learning environments (Zapata, 2011; Zagalsky, Feliciano, Storey, Zhao & Wang, 2015) or learning cyber community (Murua, Cacheiro & Gallego, 2014), to encourage student participation in online seminars (Falloon, 2011).

In relation to the objective "To propose keys to instructional design of the components of the training platform", the educational use of the platform becomes a means of technological literacy and for the development of communication skills apply to students whose main horizon is teaching. In this line are the research of Anderson (1990), Garrison & Anderson (2005) and Benedetti (2015) based to maximize the possibilities of virtual teaching. This requires the design of motivating tasks taking into consideration the different elements of each component of the platform following the proposals of Mishra & Koehler (2006) and Puentedura (2014) combining the subject matter, pedagogy and technological aspects according the course context. One proposal in this regard is that of Shaw, Larson & Sibdari (2014) on guided learning paths (Guided Learning Pathways, GLP) contributing to personalize content and activities in training platforms based on the interests and student motivation.

Propose keys are required for new questions and case studies that enable professional processes and performance. In this regard Mirriahi et al. (2015) point out the need to consider in online courses: student's learning style, instructional design, monitoring, feedback and evaluation.

A more appropriate and didactic use of the training platforms will be achieved when teachers learn and become their practice in the environment, and inquiry laboratory for collaboration with colleagues and students. It is important to generate a genuine process of research and innovation, building new keys for teacher training supported in the b-learning, personalized learning and a commitment with a permanent personal and professional improvement.

**REFERENCES**

Alobiedat, A. & Saraierh, R. (2010). The student`s attitude toward use platform as learning resources at University of Granada. Review of European Studies, 2(2), 236-244.

Anderson, G. (1990). *Fundamentals of Educational Research*. Hampshire, UK: The Farmer Press.

Benedetti, C. (2015). Online instructors as thinking advisors: a model for Online Learning. *Third Quarter, 12*(4), 171-176.

Brazuelo, F. & Cacheiro, M.L. (2015). Estudio de adaptabilidad para dispositivos móviles en plataformas MOOC. *RED, Revista de Educación a Distancia,* 47(1), 1-13. doi: 10.6018/red/47/1

Cabero, J., Llorente, M.C. & Vázquez, I. (2014). Las tipologías de MOOC: su diseño e implicaciones educativas. *Profesorado. Revista de curriculum y formación del profesorado*, *18* (1), 13-26.

Cacheiro, M.L. (2011). Recursos educativos TIC de información, colaboración y aprendizaje. *Pixel-Bit, Revista de Medios y Comunicación,* 39, 69-81. Retrieved from http://acdc.sav.us.es/pixelbit/images/stories/p39/06.pdf

Cea, M.A. (1996). *Metodología cuantitativa. Estrategias y técnicas de investigación social.* Madrid: Síntesis.

Conner, M.L. (2013). Informal learning. Retrieved from http://marciaconner.com/resources/informal-learning/

Falloon, G. (2011). Making the connection: Moore’s Theory of transactional distance and its relevance to the use of a virtual classroom in postgraduate online teacher education. *JRTE, 43*(3), 187-209.

Farfán, S.; Medina, A. & Cacheiro, M.L. (2015). La inclusión digital en la educación de Tarija, Bolivia. *Revista CEPAL, 115*(4), 71-90. Retrieved from http://repositorio.cepal.org/handle/11362/37831

García-Cabrero, B. (2009). *Manual de métodos de investigación para las ciencias sociales. Un enfoque de enseñanza basado en proyectos*. México: Manual Moderno.

García-Llamas, J.L., González-Galán, M.A. & Ballesteros, B. (2001). *Introducción a la investigación en educación*. Madrid: UNED

Garrison, D.R. & Anderson, T. (2005). *El e-learning en el siglo XXI*. Barcelona: Octaedro.

Gürtler, L. & Huber, G.L. (2007). Modos de pensar y estrategias de la investigación cualitativa. *Liberabit,* 13, 37-52.

Hernández-Sampieri, R., Fernández-Collado, C. & Baptista-Lucio, P. (2010). *Metodología de la investigación*. México: McGraw-Hill.

Huber, G.L. (2008). Aprendizaje activo y metodologías educativas. *Revista de Educación*, 1, 59-84.

ITU-UNESCO (2014). Partnership on measuring ICT for development final WSIS targets review achievements, challenges and the way forward. Retrieved from http://www.itu.int/en/ITU-D/Statistics/Documents/publications/wsisreview2014/WSIS2014\_review.pdf

Johnson, L., Adams, S., Cummins, M., Estrada, V., Freeman, A., & Hall, C. (2016). NMC Horizon Report: 2016 Higher Education Edition. Austin, Texas: The New Media Consortium.

Maita, M. & Navea, L.C. (2014). La interacción comunicativa en los foros de discusión de un entorno virtual de enseñanza y aprendizaje. *Acción pedagógica*, 23, 48-58.

Medina, A. & Domínguez, M.C. (2015a). *Didáctica. Formación básica para profesionales de la educación.* Madrid: Universitas.

Medina, A. & Domínguez, M.C. (2015b). Modelo didáctico-tecnológico para la innovación educativa. In M.L. Cacheiro, C. Sánchez & J.M. González (coords.), *Recursos tecnológicos en contextos educativos*. Madrid: UNED.

Medina, A., Cacheiro, M.L. & Medina-Medina, A. (2015). Características de la práctica docente: el proceso de profesionalización. In A. Medina & M.C. Domínguez, *Didáctica. Formación básica para profesionales de la educación.* Madrid: Universitas.

Medina, A., Pérez, L. & Campos, B. (2014). *Elaboración de planes y programas de formación del profesorado en didácticas especiales.* Madrid: UNED.

Mirriahi, N.; Alonso, D.; McIntyre, S., Kligyte, G. & Fox, B. (2015). Blended Learning innovations: Leadership and change in one Australian Institutions. *International Journal of Education and Development using Information and Communication Technology, 11*(1), 4-16.

Mishra, P. & Koehler, M.J. (2006). Technological Pedagogical Content Knowledge: A new framework for teacher knowledge. *Teachers College Record*, 108(6), 1017-1054. Retrieved from http://punya.educ.msu.edu/publications/journal\_articles/mishra-koehler-tcr2006.pdf

Murua, I., Cacheiro, M.L. & Gallego, D. (2014). Las cibercomunidades de aprendizaje (cCA) en la formación del profesorado. *Red, Revista de Educación a Distancia, 43*(15), 12-29. Retrieved from http://www.um.es/ead/red/43/gallego\_et\_al.pdf

Oproiu, G.C. (2015). A Study about Using E-learning Plataform (Moodle) in Univeristy Teaching Process. *Procedia-Social and Behavioral Sciences*, 180, 426-432.

Pérez-Navío, E., Rodríguez, J. & Carmona, M. (2015). El uso de mini-vídeos en la práctica docente universitaria. *Edmetic, 4*(2), 51-70.

Prendes, M.P. & Gutiérrez, I. (2013). Competencias tecnológicas del profesorado en las universidades españolas. *Revista de Educación*, 361, 196-222.

Puentedura, R.R. (December 12, 2014). Technology In Education: An Integrated Approach. Retrieved from http://www.hippasus.com/rrpweblog/archives/2014/12/12/TechnologyInEducation\_AnIntegratedApproach.pdf

Reichardt, Ch.S. & Cook, T.D. (1986). Hacia una superación del enfrentamiento entre los métodos cualitativos y cuantitativos. In Ch.S. Reichardt & T.D. Cook, *Métodos cualitativos y cuantitativos en investigación evaluativa* (pp. 25-58). Madrid: Morata.

Río, D. (2005). *Diccionario-glosario de metodología de la investigación social*. Madrid: UNED.

Sáez, J.M., Domínguez, M.C., Ruiz, J.M. & Belando, M. (2014), Análisis del uso de los sistemas de gestión de aprendizaje en el desarrollo profesional docente desde una perspectiva práctica en la Escuela Complutense*. Bordón, 66*(3), 133-148. doi: 10.13042/Bordon.2014.66309

Shaw, C., Larson, R. & Sibdari, S. (2014). An asynchronous, personalized learning platform-Guided Learning Pathways (GLP). *Creative Education, 5*, 1189-1204. doi: 10.4236/ce.2014.513135

UNESCO (2011). ICT Competency Framework Standars for Teachers. Retrieved from http://unesdoc.unesco.org/images/0021/002134/213475e.pdf

Valles, M. (1997). *Técnicas cualitativas de investigación social. Reflexión metodológica y práctica profesional.* Madrid: Síntesis.

Wegerif, R. (2007). *Dialogic, Education and Technology: Expanding the Space of Learning*. Nueva York: Springer.

Zagalsky, A., Feliciano, J., Storey, M.A., Zhao, Y. & Wang, W. (2015). The Emergence of GitHub as a Collaborative Platform for Education. Motivation and Dynamics of the Open Classroom. CSCW 2015, March 14-18, 2015. Vancouver, BC, Canada.

Zapata, M. (2011). Evaluación de la calidad en entornos sociales de aprendizaje. *RED, Revista de Educación a Distancia*, 29, 1-10.