# University teacher's attitudes to ICTs.

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In this work, it is presented a way of evaluating university teachers' attitudes to know their beliefs, feelings and tendency to behave when faced with ICTs curricular integration, given the new roles they are playing as teachers in the information, communication and knowledge age. The design, creation and development of this way of evaluating is set within the research group TICDUS[1].

**Key words**: Evaluation; attitudes scale; ICTs; university teachers; teaching-learning

## 1. Justification

This work starts from 4 previous approaches:

1.1. The study of attitudes is considered to be an area of social interest to know how an individual takes a stand towards objects, people, ideas or situations. The attitude is a previous disposition to psychosocial stimulus. Knowing a person's attitudes could represent relatively an easy and convenient guide to predict very skillfully his future behaviour when faced with psychosocial objects.

1.2. The incorporation of Information and Communication Technologies in the university teaching-learning process is not only a social demand, but institutional. The launch of European Higher Education Area causes some changes in models, strategies and methodology and in the introduction of resources which adapt to new educational and social demands.

1.3. The teachers' training process for these changes has to be appropiate, right and justified. Therefore, it has to start from evaluating and analysing the real situation of cognitive, motivational and behavioural characteristics of human resources which has to implement these changes.

1.4. The study of teachers' attitudes to some educational aspects has been traditionally studied and assessed, but nowadays, means of evaluating teacher's attitudes are not found; maybe because the attitude object itself has been introduced vertiginously in our lives in the last years, being part of our daily resources and personal, social and professional experiences. It is time to know teachers' position to new informative and communicative resources.

## 2. Research framework

This research is set within the objectives of a broader research that considers knowing the university teachers' competences, attitudes and formative necessities in the pedagogic use of ICTs. It also considers designing strategies and resources aimed to integrate new technologies in teaching-learning process with support processes for training through virtual tools.

The specific objective included in this work is to design, create and validate a university teachers' attitudes scale to ICTs.

The attitudes scales belong to evaluating methods of self-report: individuals give information about themselves. In contrast to other ways of evaluating personality, in this attittude scale, the reference is always to the attitude object. Therefore, it is suppossed to work a tool that allows us to know what teach-

[1] TICDUS. Grupod de Investigación de la Universidad de Salamanca en el departamento de Didáctica, Organización y M.I.D.E. en el proyecto I+D+I (2004-2007): Integración de las Tecnologías de la información y Comunicación como herramientas docentes en la Universidad dentro del marco europeo. Diseño y desarrollo de una propuesta formativa

ers say about themselves through certain expressions and regarding to the attitude object: ICTs; which beliefs, feelings and behaviour make teachers react during a continuum.

Within the different kinds of scales and tools, Likert-type model has been selected because of its simple format, with favourable-unfavourable items and because of its discriminatory power.

## 3. Phases

### 3.1 Feature definition and preliminary plan

Firstly, it is suppossed to define the concept map that covers our attittude's objective. In order to do that, bibliography on the subject has been consulted and descriptors has been created about having a favourable or unfavourable attitude to ICTs.

The descriptors, previously used as external elements to the attitude object, are those which would answer questions like: how does the individual react to ICTs in general? Aspects referred to teaching functions, which tasks does a teacher have to do in teaching?, which aspects of students' learning are going to be taken into account?, how does a teacher live the permanent training in ICTs?, which aspects of collaborative work can be stressed?, which aspects and functions in a university context can be taken into account?

Firstly, the teacher as a social individual, is living in a certain way the introduction of ICTs in society. Secondly, as a theacher, he has some duties in his profession: he has to prepare, program, plan what will be taught and how. In this phase the teacher has to look for information, define objectives, contents, methodology, choose resources and design the evaluation. We are interested in how the teacher considers the ICTs integration in this process.

The teacher has also to develop his teaching, teach, give seminars, tutorships. In this phase, it is very important that students are interactive. It is essential to establish a communicative system that allows the teacher to do feed-back with trainees and we consider how the teacher takes a stand towards the ICTs inclusion in feedback situations.

While, the teacher is evaluating the students' learning, he has to check if the planned objectives have been achieved. In each teaching task, the teacher has to bear in mind how their students learn, promote this process and verify if the goals have been attained. How does a teacher consider the learning evaluation through ICTs?

In current moment, nobody argues the necessity of a permanent training of any professional; in the case of a teacher, it is essential and it is part of their duties, as well as their professional improvement. The university teachers experience in this field is part of the component that has been defined as permanent training. The same happens with the collaborative work between different professionals, interdepartmental and intercampus, that forms part of the current knowledge globalization; the teacher has to take a stand towards the new proposals to share information and ways of working.

It cannot be forgotten, as a variable, those experiences that the university teacher has got in the context in which he develops the teaching-learning process, both the broadest - university, department -, and the closest – centre, classroom. In the case of ICTs, resources policy, presence and availability of the resources within the context where the teaching-learning process is carried out, play a very important role.

### 3.2. Items writing

From the fields initially defined, 121 items have been written, taking into account that they must answer to the three intrinsic aspects of the attitude: cognitive, emotional and behavioural (Table 1). Moreover, when working out this items, it has been taken into account the characteristics defined in studies about attittudes measuring, which appear in Morales (2000): Relevancia, claridad, discriminación y bipolaridad.

**Table 1**. Descriptors of teachers attittudes to ICTs in the teaching-learning process and some examples of items selected in the first phase.

| COMPONENTS | COGNITIVE COMPONENT | EMOTIONAL COMPONENT | BEHAVIOURAL COMPONENT |
|---|---|---|---|
| **ICTs IN GENERAL** | "I think that we have to be opened to innovations provided by ICTs" | "I will use ICTs but I feel insecure" | "ICTs field is so wide that I do not know how to start" |
| **TEACHING DUTIES:<br>* PLANNING<br>* DEVELOPMENT<br>* ASSEMENT** | "Internet is useful for many things but not for teaching" | "It is entertaining to propose virtual activities with students" | "I do not use ICTs in my subject" |
| **STUDENTS LEARNING PROCESS** | "The use of some resources or others, have not got any effect on the students' learning" | "My studens see me as an update teacher in ICTs" | "I demand my students to use ICTs as essential resources" |
| **PERMANENT TRAINING** | "I don't think that a teacher has to train in ICTs" | "The training I have done in ICTs is no use to me" | "I'm opened to new proposals with the use of ICTs in teaching methodology" |
| **COLLABORATIVE WORD** | "It's worth taking part in "learning virtual forums" | "I like working with other colleagues that introduce ICTs in teaching" | "I have created online materials that can be shared and used by other teachers" |
| **EDUCATIONAL CONTEXT** | "There is a lack of many technological resources to be able use ICTs in teaching" | "I would enjoy working in a centre which had more technological resources" | "I know the technological resources that my centre has at its disposal" |

In the items writing, observations proposed by Morales (2000) have been followed, and the initial scale has been passed to linguistic experts, so that they classify the items -clear and not clear- as well as correct statements that can be linguistically improved. From the beginning, it has also been tried that the number of unfavourable items towars the attittude object are the same as the number of the favourable ones. RAY (1982).

The total number of selected items in this first phase has been 80, which are considered to be clear in its writing.

### 3.3 Answers writing and coding

Model with 5 choices expressed quantitatively has been selected giving the qualitative translator code: In the correction code the values for negative items have been inverted:

Very agree (5) Agree (4) Neither in favour nor against (3) In disagreement (2) In total disagreement

The option of considering the central answer has been kept in order to increase reliability; it also allows the evaluated individual to specify his answer. Moreover, it allows the choice of not making any statement when the item presents unknown or little familiar activities and at the same time, it introduces the distance between poles apart. The indifference as an answer, can be considered an approximation to both beeing in favour or against. “Central answer individuals” can be of interest for the training plan prepared in the research, due to its degree of indecision. In this case, motivation would play an essential role.

### 3.4. Items order and number.

The selected items in phase 2 are ordered by fields or subscales in order to increase convergent and diverging validity, making sure that the atmosphere, created by the previous item, influences as little as possible in the next one. Once passed the judges contents test, reducing the number of items has been considered in order to be able to use not a very large sample in the reliability study of the tool.

### 3.5. Analysis, items selection and reliability calculation.

The pilot scale has been passed to a representative sample of university teachers and in parallel with this, the judges test is done to several experts of different universities, specially from Social Psychology area, in order to value the items content in a scale of 1 to 11

Although the judges test is not strictly necessary in Likert-type scales, it allows us to complete the content validity of the scale.

The selection method for definitive scale items will be done with the calculation of correlation coefficient of each item with the sum of the rest (item-total) and with the discrimination level of each item established by the judges. In current moment, we are in this phase of the process.

### 3.6. Validity tests planning

In each phase of the scale's design and creation, reliability and validity aspects have been minded. In the moment at which the process is, it is planned the reliability calculation or internal consistency coefficient of the scale with the @ of Conbrach. Content validity has been taken into account when defining the concept map with the appropriate descriptors and with the external components of the attitude object.

## 4. Discussion

This work's interest lies in the thoroughness followed when working out a psychosometric test that allows other groups of people and university teaching centres, which want to know aspects about their predisposition teachers, to use ICTs.

Another point of interest is that similar tools, that can evaluate the individuals attitudes to ICTs, can be created through the selected items and changing analysis fields or subscales.

We consider that the main contribution of this work is that, in current literature, different "attitudes scales" can be found. These are not really attitudes scales, but just observation questionnaires; they are specific tools because they have not gone through neither validation phases nor reliability search in order to consider them as a psychosomeric test of widespread application.

The definitive test and the application results among university teachers will be presented within the research that TICDUS group is doing and will finish in 2007.

## References

[1] Morales, P., Medición de Actitudes en Psicología y Educación. Universidad Ponticia Comillas, Madrid, España, 2000.

[2] Ray, J.J., The Construct Validity of Balanced Likert Scales, Journal of Social Pychology, 118, 1984 pp. 141-142