



Factors Affecting Teachers' Attitudes toward Information and Communication Technology (ICT) in the Moroccan University: A Comparative Study

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Abstract

The developments of information technologies (ICTs) have increasingly changed the way of learning and teaching. Hence, the role of educators encompasses the process of facilitating learning and helping students develop their learning abilities. The use of online ICTs to enhance teachers' professional development is gaining popularity and is being seen as essential to improve the quality of teaching methodology. In Moroccan universities, the use of ICTs is still facing barriers and moves in a slow cadence, and In spite of their positive attitudes towards ICTs, teachers do not adopt ICTs tools in classrooms with the same frequency. To investigate factors that might affect teachers' attitudes and use of ICTs, a comparative study has been carried out on a sample of 96 teachers belonging to two faculties: Faculty of Arts and Humanities and Faculty of Science, from two cities, namely Meknes and Oujda. There was a difference in teaching experience, which ranged from 1 year to more than 30 years of teaching. We used descriptive statistics, cross tabulation and Chi Square test, and independent sample t test to compare groups' means. It has been found that there was a significant effect of two categories, the teaching experience and the "Filière", on most of ICTs aspects of the questionnaire whereas there was no effect of university nor gender on the attitudes of teachers towards ICT.

1. Introduction

Universities around the world have known spectacular changes with the advent of Information and Communication Technologies (ICTs) [1]. However, its implementation has known some differences between countries, regions, institutions and even individuals [2]. Scientists introduced "digital divide" to make a clear distinction between communities that have completely integrated ICTs and the others where there seems to be a disappointingly slow uptake in schools despite the numerous training programs and investment in ICTs resources [3].

In Moroccan universities, teachers' integration of ICTs in the classroom context is controversial despite their positive attitudes ([4]–[6]). Researchers have tried to understand and explain the reasons behind some differences such as the technological tool used, the frequency of use, and the context of use in order to enhance the application of ICTs for pedagogical purposes [7] , and have suggested some factors that could obstruct or stimulate teachers' use of ICTs [7], [8].

This paper aims at investigating four factors, namely the city, gender, the "filière" and the teaching experience that might affect the utilization of technological tools in classrooms and pedagogical activities among Moroccan university teachers. To this end, the present paper seeks to explore the question: to what extent do the four factors affect university teachers' perceptions of ICTs ?

This paper is divided into two main section. The first one deals with the methodological tools adopted while the second section is devoted to results and discussion.

2. Methodology

This paper aims at identifying some factors that might affect teachers' use of ICT in their practices. Therefore, a questionnaire was designed for the purpose of the present study. Questions were related to teachers' perceptions and based on a list of items which have been measured on a lickert scale ranging from Strongly Disagree (1) to Strongly Agree (5).

The sample consisted of 96 respondents belonging to two faculties: Humanities, and Science from two cities, namely Meknes and Oujda. Hence, we formed four groups of 24 respondents each (Humanities in Meknes, Science in Meknes, Humanities in Oujda and Science in Oujda). The teachers' teaching experience ranged from 1 year to 32 years.

The collected data has been analyzed using statistical tools to answer the research questions of the study.

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We used descriptive statistics, cross tabulation and Chi Square test, and a two ways Analysis of Variance (ANOVA) to compare the groups' means.

3. Results & discussion

The sample consists of 56 males and 40 females representing 58.3% and 41.7% of the total number of respondents. To be able to make comparisons between groups, the same distribution by gender has been kept for all four groups. The second monographic variable, which is the teaching experience of respondents, ranges from 1 to 32 years of teaching with a mean of 12 years and a standard deviation of 9 years. Our sample seems, as it is apparent on figure 1, to represent the university teachers' community since all the seniority levels are present.

Moreover, it has been shown that one of the factors that could significantly affect the use of ICT is the teaching experience ([9]). This variable has been included into the model in its categorical form, that is why we have categorized it in the three groups: Teachers having a teaching experience less than 10 years are assigned to category 1, those with 10 to 20 years to category 2 and the rest to category 3.

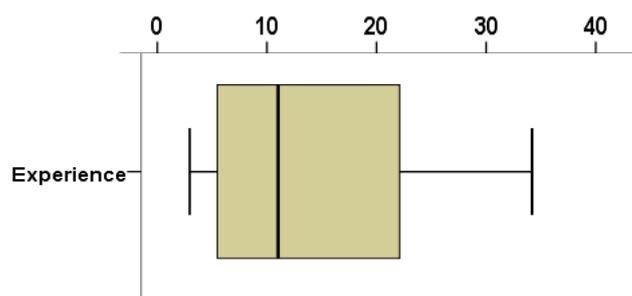


Figure 1: boxplot of teaching experience distribution.

3.1. Teacher's perceptions of ICTs

Concerning this first component, the respondents have shown a global positive attitude towards ICTs. Indeed, the majority has opted for either strongly Agree or Agree with all items, except for the ones related to negative effects of ICTs (making learners lazier and reducing their critical thinking) for which attitudes are more shared between acceptance and rejection.

To test whether the "filière", the city, gender, and the teaching experience variables have any effect on the above results, we have submitted the data to the Chi square test (test of independence). The results, are not significant for both gender and the city but have different levels of statistical significance for the "filière" and the teaching experience. This means that there is no relationship between the city and gender on the one hand, and all the items included in this questionnaire on the other hand.

However, the "filière" and the teaching experience groups affect all the items. In fact, science teachers have more positive perceptions of the ICTs' use in the teaching process than those from the arts and humanities. In terms of percentages, we have found that the difference between science and humanities teachers could vary from a small one (6% of difference for ICT helps to enhance the quality of course content) to a very big one (63% of difference for ICT making the teaching process more effective). Most of the differences range between 26% and 48% of difference.

Concerning the teaching experience, it seems that the new teachers are more favorable to the use of ICTs. These results are not surprising since this category of teachers has evolved in a digital environment. For all items, group one seems to be more positive than the two others, whereas the third group has, in general, a negative attitude towards the use of ICTs, or at most are neutral. Teachers with the least teaching experience are explicitly positive while the others are either neutral or favorable but they rarely strongly accept any of the studied suggestions.

3.2. Factors affecting teachers' perception toward ICTs

For the global attitude, scores were analyzed in a 2 ("Filière": Science, Humanities) x 3(teaching experience group: 1, 2 and 3) ANOVA. This enabled us to test the simultaneous effect of the two factors on the dependent variables (Content (C): item 1 to 4, Learner (L): item 5 to 8 and negative



aspects (NA): item 9 and 10). Means and standard deviations for the dependent variables for each group are presented in figure 2.

Results of the two way ANOVA revealed no significant interaction between the factors ($p=0.239$) but a highly significant effect of the "filière" ($p=0.000$) and the group of teaching experience ($p=0.000$). This confirms the finding above that the science teachers have different attitudes from their humanities counterparts. Moreover, the teachers' perceptions of ICTs change in a negative way when the teaching experience increases. These results are congruent with the previous works, which points out that the teaching experience affects negatively the attitude towards ICTs [10]–[12]. Moreover, over the last few years, many universities in Morocco have opened some training programs for teachers to enhance their knowledge in the use of ICTs for pedagogical purposes. However, the outcome is not yet apparent in their teaching practices ([13], [14]).

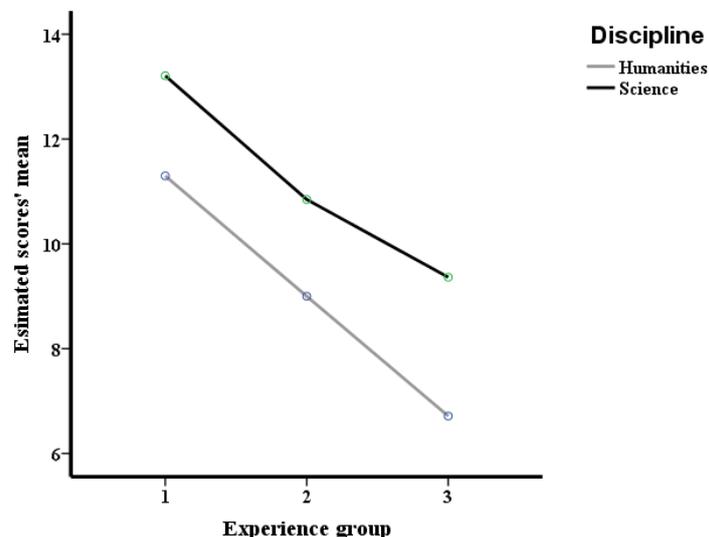


Figure 2: Teachers attitude's scores by teaching experience and Filière

As for the dependent variable of Content, the same tendency is noticed for the variable 'learner' for whom differences reach five points between science teachers and humanities teachers (20.6 against 15.6). The same ranking has been obtained when using teachers' seniority groups with scores of 19.5, 16.7 and 14.7 respectively from teachers with the least experience to the ones with the most experience.

4. Conclusion

The present paper is based on the authors' observations that Moroccan university teachers do not use ICTs enough for pedagogical purposes. The most important results include the fact that teachers have a highly positive attitude towards ICTs. Moreover, teachers' attitude towards ICTs is not affected by gender nor by the city and there is no interaction by the factors object of the study. Finally, science and newly recruited teachers are more favorable to ICTs than humanities and experienced ones.

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