EDUCATION-LINE

Towards a new direction in teacher training practices i n view of new challenges

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Paper presented at the European Conference on Educational Research, University of Lisbon, 11-14 September 2002

ABSTRACT

This paper proposes to show the main results of a research which study the receptiveness of teachers to pedagogical innovation, understood as the more or less favourable attitudes they assume towards it, in their teaching roles, as well as the influence that personal variables (personality or teacher training) or variables of the school context have upon their predisposition to innovate. Based on a sample of 377 teachers from Viseu county, and using the hierarchical regression model, our results point to the importance of the personal variables in relation to receptivity to innovation, and in particular personality characteristics, which account for a significant portion of the variance in the teachers' attitudes towards pedagogical innovation. However, the data also emphasise the relevance of the variables of the school context and the continuous training of the teacher, which explain a significant, though smaller portion of that variance. With regards to the practical implications, it should be noted that the findings highlight the importance of promoting programmes of personal development of teachers so as to make them more receptive to innovation.

This paper proposes to show the main results and practical implications of a research study carried out within the scope of a Doctoral Thesis in Educational Sciences (in the specialised field of Educational Psychology), presented to the Faculty of Psychology and Educational Sciences of Coimbra University, on the 27th April, 2001. The thesis was supervised by Professor António Simões and dwells upon the theme of teacher receptiveness to pedagogical innovation.

INTRODUCTION

The profound social changes that we witness today are occurring at various levels (Science and Technology, Culture, Politics, among others), challenging our capacity of adaptation. In order to prepare for the future, innovative responses are required, not only from society, in a general sense, but particularly from those responsible for Education.

It is within this context that receptiveness to change and innovation is placed - it is an object of study comprised within the field of change and innovation and is considered one of the main requisites for theorising the reasons why the efforts to innovate fail or are well succeeded (Giaquinta, 1998). However, no existing model is so comprehensive and integrated as to account for the multiplicity and dynamic interrelation of the factors implicated.

In view of such an important lacuna, the aim of the Doctoral Dissertation was to study the receptiveness of teachers to pedagogical innovation, understood as the more or less favourable attitudes they assume towards it, in their teaching roles, as well as the influence that personal variables (personality characteristics or professional training) or variables of the school context have upon their predisposition to innovate.

The problem of the research is the following:

> *Which variables are associated with the attitudes of teachers towards pedagogical innovation namely in relation to their new roles, defined from the viewpoint of a permanent education?*

The main goals of the empirical research were a) To assess the receptiveness of teachers towards their new roles; b) To analyse the relationship between a set of variables (personal and of the school context) and the attitudes to the proposed innovation.

Three hypotheses were formulated, which suggest the influence of some variables, namely the teacher's personality characteristics, his/her level of continuous training and also variables of the school context (their perception of the school context and professional autonomy) upon their attitudes regarding pedagogical innovation.

Our hope is to contribute, in this way, to broaden educators' knowledge about the problematic of pedagogical innovation as well as to delineate future practical perspectives, namely in terms of the teachers' professional and social development.

METHODOLOGY

Subjects

The research carried out involved administering a set of psychological scales and a questionnaire to a sample of 377 teachers of the 2nd and 3rd cycles of Basic and Secondary schools from Viseu county. The sample of the final study is comprised of a group with an age range between 25 and 44 and with a slightly higher number of female subjects. All levels of education are represented, from the 2nd cycle of Basic Education to Secondary Education. Most of the teachers investigated have a degree and professional training. Their professional experience varies between seven and twenty four years.

Variables

The dependent variable (Y) of our study is teachers' receptiveness to innovation, that is, to their new roles as they are defined from the viewpoint of a permanent education (lifelong education perspective). Bearing in mind this perspective, the most important roles of the teacher are considered to be the following: collaborator in research and agent of pedagogical innovation; facilitator of learning; technical expert in pedagogy; co-evaluator; member of a teaching team (Simões, 1979).

On the other hand, the independent variables (Xs) which are believed to be related to the dependent variable, are varied :

- *The teacher's personality characteristics* (group A) (intrinsic *vs.* extrinsic motivation, innovation, risk taking, openness to experience, tolerance to ambiguity);
- *Variables related to the school context* (group B) namely those concerning the perception the teacher has of the stability/change of the educational system, of teacher/pupil relationship, of personal and professional development and of teacher autonomy;
- *Variables of the teacher's training* (group C) (scientific, pedagogic and professional, continuous);
- *Other demographic variables* (age, gender, years of teaching experience,

professional situation and grades taught).

Instruments

Nine different instruments were used to gather the data needed for the empirical verifications. A scale of attitudes (AFIP), which the author of this paper had designed specifically for the purpose of empirical research within the context of her Master's Course (Cardoso, 1991) was administered, after reformulation, to measure the dependent variable. The scale, containing 48 items, showed satisfactory psychometric characteristics, with an internal consistency coefficient (Cronbach alpha) of .92 (Table 1).

Table 1 - Internal reliability coefficients (alpha de Cronbach) of the scale and their dimensions

Scale/dimensions	Final study
AFIP	.92
Co-assessment/innovation	82
Team teaching	.87
Student development/innovation	.73
Educator	.75
Technical expertise	.69

As far as the independent variables are concerned, instruments already in existence were used (e.g., North-American or Australian ones) which were, whenever possible, collated with the Portuguese population (e.g., scale of openness of the "NEO Five-Factor Inventory" (Lima, 1997); three sub-scales of "Jackson's Personality Inventory" (Ferreira, 1991), the "Work Preference Inventory" (Amabile *et al.*, 1994), the "Teacher Autonomy Scale" (Pearson & Hall, 1993), the "School Level Environment Questionnaire" (Rentoul & Fraser, 1983) and the scale of "Tolerance of Ambiguity" (Mac Donald, 1970).

Results

First, we carried out statistical calculations namely the preliminary analysis of the data and the bivariate statistics, which include the measures of correlation and of the differences between groups.

To highlight that the attitudes towards pedagogical innovation were significantly related with the majority of the personality variables (group A), school context (group B) and teacher training (group C). To note the coefficients of correlation with the openness to experience (r=.39), innovation (r=.33), tolerance to ambiguity (r=.26), continuous training (r=.26), teacher' perception of teacher/pupil relationship (r=.24) and intrinsic motivation (r=.23) (level of signification $p \leq 0.01$).

Besides these statistics, the combined influence of the independent variables upon receptiveness to innovation was also appreciated, using hierarchical multiple regression. Through this statistic procedure it was possible to calculate the relative contribution of each group of independent variables in accounting for the variance of the dependent variable, according to a pre-established entry order.

Therefore, considering that the personality variables precede the variables of the teacher's professional situation and that the two of them precede those of the teacher's professional training, eight variables were chosen to be included in multiple regression, in the following order: in the first place, five variables from group A (intrinsic motivation, innovation, risk taking, openness to experience and tolerance to ambiguity); then two from group B (teacher's perception of teacher/pupil relationship and of teacher autonomy); and, finally continuous training, from group C.

In this way, an adjusted R^2 of .17 ($p<0.001$) was found, for the percentage of variance in the teachers' attitudes towards pedagogical innovation, explained by the five chosen personality variables altogether (cf. Table 2). Bearing these results in mind, **the first general hypothesis (H 1)** was corroborated, once it was stated that "the teachers' personality characteristics will have a significant influence upon their receptiveness to their new roles, in view of a permanent education".

By adding the two variables of the school context to the regression model, adjusted R^2 rose to .21 (cf. Table 2). This determination coefficient remained statistically significant ($p<0.01$). It must be stated that by including these two variables in the regression model, there was a significant change (of .04) of the R^2 change. Therefore, the **second general hypothesis (H2)** established was also corroborated, according to which "the perception which teachers have of the school context where they work will have a significant influence in their more or less favourable attitudes towards the new roles proposed".

Table 2 - Summary of some fundamental parameters of hierarchical multiple regression

Blocks of variables	R	R^2	R^2 Adj.	Change in R^2	F change	Significance of the change
A	.428	.183	.172	----	----	----
B	.477	.227	.212	.044	10.518	.000
C	.513	.263	.247	.036	18.074	.000

Abbreviations: R - coefficient of multiple correlation; R^2 coefficient of determination; R^2 Adj. - Adjusted coefficient of determination

Finally, by adding the variable of continuous training to the regression equation, adjusted R^2 rose to .25. It must also be noted that R^2change rose significantly by .04 ($p<0.01$) (cf. Table 2). Thus, the **third general hypothesis (H3)** was corroborated: "the teachers' level of continuous training will have a significant influence upon their receptiveness in relation to new roles, defined from the viewpoint of a permanent education".

The results point out that openness to experience, teacher's perception of teacher/pupil relationship and continuous training are variables with more influence upon the attitudes towards innovation.

ANALYSIS AND DISCUSSION OF THE RESULTS

The results obtained account for a significant portion of the variance in the teachers' attitudes towards innovation, and, in general, point to the importance of the personal variables in relation to receptiveness to innovation, and in particular personality characteristics, which explain a significant portion of the variance in the teachers' attitudes towards pedagogical innovation. However, the data also emphasise the relevance of the variables of the school context and the continuous training of the teacher, which explain a significant, though smaller portion of that variance.

In specific terms, these results stress the importance of the teacher's personological variables in the attitudes he/she displays regarding pedagogical innovation. What this means, more objectively, is that there may be teachers who, for personal reasons, tend to be more open to change than others. As a matter of fact, considering that innovation is a complex process, following the introduction of a novelty factor in the educational system, which will alter the way it operates, different reactions on the part of teachers are to be expected: favourable reactions, when the subjects are more innovative, more open to change, more motivated intrinsically in relation to education, tolerant towards ambiguity and willing to take risks; and less favourable attitudes, on the part of teachers who share these characteristics to a lesser degree.

These results also highlight the importance, for innovation, of the teacher's perception in relation to some fundamental dimensions of the *school context*, namely the relationship teacher/pupil, personal

and professional development and professional autonomy. Particular emphasis was given to the first variable mentioned, which means, in objective terms, that the teachers who are more open to innovation are seen to have a more favourable perception of the relationship teacher/pupil and also of their own personal and professional development as well as professional autonomy.

The results show, quite clearly, the importance of *continuous training*, which is seen to be positively associated with receptiveness to pedagogical innovation, influencing it in quite a significant way. This means, objectively, that the teachers who are active participants in post-graduate courses, scientific and pedagogical assignments and in research projects (inside or outside school) also tend to display more favourable attitudes to the new roles proposed .

In short, these results highlight the personal dimension of receptiveness to change and also point to the importance of considering a variety of factors related with the teachers, school context and continuous training.

The implications of this study are of several kinds. To summarise we enumerate the following: the teachers who are potentially more innovative should be identified and their performance should be given incentives; programmes of personal development of teachers might be promoted so as to make them more receptive to innovation; specific psycho-social dimensions of the school context, conducive to innovation, should be enhanced; team work among teachers should be promoted and their participation in scientific and pedagogical projects fostered; the continuous training of teachers should be directed towards the promotion of individual and institutional change; more articulation between the teachers' undergraduate and continuous training should be sought, which would sensitise the undergraduate student who is to become a teacher for the issue of educational change.

BIBLIOGRAPHY

Amabile, T. M., Hill, K. G., Hennessey, B. A., & Tighe, E. M. (1994). The Work Preference Inventory: Assessing intrinsic and extrinsic motivational orientations. *Journal of Personality and Social Psychology, 66* (5), 950-967.

Bryman, A., & Cramer, D. (1992). *Análise de dados em Ciências Sociais: Introdução às técnicas utilizando o SPSS*. Oeiras: Celta Editora.

Cardoso, A. P. (1991). *A receptividade dos professores à inovação pedagógica na perspectiva da educação permanente*. Tese de mestrado não publicada, Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra, Coimbra.

Cardoso, A. P. (1999). A receptividade à inovação e a formação dos professores. *Revista Electrónica Interuniversitária de Formación del Professorado, 2* (1).

Cardoso, A. P. (2000). *Receptividade à inovação pedagógica: O professor e o contexto escolar.* Tese de doutoramente não publicada, Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra, Coimbra.

Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences* (2ª ed.). Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Ferreira, J. A. (1991). O Inventário de Personalidade de Jackson. *Psychologica*, 6, 77-89.

Giacquinta, J. B. (1998). Seduced and abandoned: Some lasting conclusions about planned change from the Cambire school study. In A. Hargreaves, A. Lieberman, M. Fullan & D. Hopkins (Eds.), *International handbook of educational change* (Pt.1, pp. 163-180). Dordrecht: Kluwer Academic Publishers.

Hargreaves, A. (1998). *Os professores em tempos de mudança: O trabalho e a cultura dos professores na idade pós-moderna*. Lisboa: McGraw-Hill.

Lima, M. P. (1997). *NEO-PI-R: Contextos teóricos e psicométricos - "Ocean" ou "iceberg"?*. Tese de doutoramento não publicada, Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra.

Mac Donald, A. P. (1970). Revised scale for ambiguity tolerance: Reliability and validity. *Psychological Reports*, 26, 791-798.

Mialaret, G. (1980). Recherches sur les modifications d'attitudes pedagogiques des educateurs. *Les Sciences de l'Éducation*, 2-3, 59-72.

Pearson, L. C. & Hall, B. W. (1993). Initial construct validation of the Teaching Autonomy Scale. *Journal of Educational Research*, *86* (3), 172-178.

Rentoul, A. J., & Fraser, B. J. (1983). Development of a school level environment questionnaire. *The Journal of Educational Administration*, *21* (1), 21-39.

Simões, A. (1979). *Educação permanente e formação dos professores*. Coimbra: Livraria Almedina.

Simões, A. (1999). A personalidade do adulto: Estabilidade e/ou mudança? *Psychologica*, 22, 9-26.

UNESCO (1996). Declaração da *45ª sessão da Conferência Internacional de Educação: Reforço do papel dos professores num mundo em mudança*. Genebra: UNESCO/BIE.

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