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DO TEACHERS REALLY WANT TO CHANGE THEIR BELIEFS RELATED TO EDUCATION?

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Abstract

Teachers' beliefs represented a special interest, for both educational and psychological researches. The aim of educational domain were aspects related to methods, evaluation, urban-rural schools, experience, the level of teaching (primary, secondary and high school), gender, the type of institution who offered program in teacher training, on the other hand psychological domain paid attention on personality traits, Locus of control, stress, burnout and maybe the most complex aspect, of belief change. The present article is a review of the ninth main models on belief change, proposed by researchers who have studied this domain. Teachers beliefs' change represented a real interest concurrently with implementation students centred learning strategies and constructivist-oriented reforms. The main aspects that concern all factors involved in educational settings (teacher, administrators, and pupils) are teachers' resistance to reforms, which hold them in a traditionalist position, and superficial belief change (assimilation), who does not affect the core beliefs of teaching only superficial beliefs.

Keywords: Teacher, beliefs, beliefs change, constructivist teaching, resistance

1. Introduction

Research in the field of teachers' beliefs on education have drown specialists' attention for over 60 years. At the beginning, they aimed at identifying the psychological constructs involved and associated beliefs as predictors and explaining elements of inter-individual differences between teachers (their practice in the classroom, their performances in the field and their expertise). Though they have written over 700 articles about teachers' beliefs, one still cannot draw clear conclusions on the predictive potential of beliefs (Fives, & Buehl, 2012).

Teachers' beliefs are a key concept because for understanding teaching it is important to understand their beliefs about their work (Nespor, 1987). Many of the future teachers attending training programmes within departments for teaching staff training and within departments of social sciences are naive regarding their teaching abilities and class management, showing an "unrealistic optimism" particularly as far as the tasks under their control are concerned (Weinstein, 1988; Tschannen-Moran Woolfolk, & Hoy, 1998).

The importance of studying in service and pre-service teachers' beliefs was emphasised by Pajares (1992) who quoted Fenstermacher (1978, p. 307) who predicted that the "study of beliefs would become the focus for teacher effectiveness research" and Pintrich (1990) who suggested, "beliefs ultimately will prove the most valuable psychological construct to teacher education".

Bandura (1997) also supported the importance of beliefs mentioning that the teachers, responsible in the educational environment for the organisation, structuring, social development and pupils' learning experiences rely, in their work, on both explicit and implicit beliefs from class context to world context. Due to the complexity of teachers' beliefs and, particularly, to their evaluation, Muis (2004) makes a very pertinent recommendation – the need for beliefs to be evaluated in context. At the same time, one should also take into account teachers' personalities because beliefs are an extremely important component of one's personality.

When teachers' beliefs observe the national educational strategy, no matter the country, the progress is obvious in both teaching methods and student approach. The main issue arises when we need to change beliefs and when teachers oppose change because their beliefs hinder change (Thompson, 1984). One of the most complex methods that raised challenges was constructivism, a method that involves active involvement from students, while teachers have the responsibility of getting the students involved and of turning them from passive into active receivers (Skott, 2015).

2. Problem Statement

Improving teachers' teaching methods has been a field of great interest for decision-makers in the educational system. In this respect, they are organising multiple courses of professional development meant to make teachers "abandon" traditional teaching methods and adopting modern ones, particularly constructivist ones. Some of these courses are fruitful, some others are not. What they do not always take into account is teachers' motivation for attending such courses, their degree of involvement, and particularly the complex process of changing teachers' beliefs regarding education. Through these courses, teachers can use new knowledge, abilities, skills and beliefs to improve the content of what they teach and the teaching approach (Desimone, 2009).

Thompson (1992, p. 140) mentioned that, "The phenomenon of teachers modifying new ideas to fit their existing schemas is not well understood. Yet, understanding why teachers do this instead of restructuring their current schemas is central to effecting change". Since beliefs develop gradually and changing them needs time, Fullan (1991) claimed that change hurts and this makes teachers refuse it. The most difficult to change are core beliefs that are very strong and that are less permeable to rational critiques and changes compared to peripheral beliefs that are much easier to analyse and change (Turner & Chauvot, 1995; Mkomange *et al*., 2012).

Teachers' resistance to change is a true issue for school principal because, no matter the efforts, school behaviours and results are relatively the same. Pre-existing beliefs about prevent teachers from making changes (Franke et al., 1998). Pintrich (1999) claimed that adopting more complex epistemological beliefs (provided mainly by constructivist methods) determine conceptual changes (Gill, Ashton & Algina, 2004). Mason's study (2002) claimed that systematic processing is the mechanism through which general epistemological beliefs influence changes related to discipline.

Interventions for the changing of beliefs are a major goal in initial teacher education because reflection after practice classes has a positive effect on the changing of beliefs (Tillema, 1997; 2000). Likewise, in generating models for the changing of teachers' beliefs, Opfer, Pedder & Lavicza (2011) suggested a unitary approach (the relation between beliefs, practice and students' change), not a sequential one.

3. Research Questions

1. What types of models of belief changing are presented in the research in the field? To answer this question, we identified the studies that present such models (both general and teacher-specific ones).

2. What are the strengths and the weaknesses of the models identified? To answer this question, we have analysed the design and the description of the models to identify the necessary data.

4. Purpose of the Study

The goal of this article is to identify different models of changing beliefs and to critically analyse them. The research will help teachers and school principals wishing to implement constructivist-teaching methods to understand the difficulty of changing beliefs and resistance to change in some teachers.

5. Research Methods

This study relies on articles indexed in the databases PsycINFO, ERIC, Proquest Dissertation and Theses and Google Scholar. We have selected only articles in English. To carry out our research, we used the search phrases: "teacher beliefs change" OR "teachers change" OR "belief change" OR "conceptual change". We have analysed the abstracts and, after removing the one irrelevant for our study, we considered eligible 23 abstracts. We obtained the full-text articles representing the ground for this review. The articles were identified between May and July 2016..

6. Findings

Changing teachers' beliefs is a very difficult process and it should start ever since the training period within the departments of teaching staff training and of social sciences, where the future teachers come with previous experiences and certain beliefs regarding the subjects to teach to their students. This is a possible threat to the wish of getting involved in the difficult process of changing beliefs.

Changing teachers' beliefs about education raised the interest of researchers about 50 years ago, the most representative study being that of Klein (1969). Numerous studies claim the difficulties associated with the idea of change (teachers do not change or they become recalcitrant) (Fullan, 1991; Duffy & Roehler, 1986). Morimoto (1973, p. 255) claimed that, "When change is advocated or demanded by another person, we feel threatened, defensive, and perhaps rushed". The way in which school principals approach the topic of change marks the way the courses of personal and professional development for the teachers are organized. If one supports teachers' autonomy and a working environment in agreement with critical debates on educational practice, there are chances for teachers' beliefs to change (Richardson, 1998).

Ever since Rust's study (1994) on pre-service teachers and debutant teachers they drew the conclusion that debutant teachers' beliefs are strongly influenced by the demands of the school management of the school where they teach. It is a true challenge for teachers' training programme administrators to determine changes of personal beliefs in teachers (Buchmann & Schwille, 1983).

Gregoire's study (2003) analysed critically five models of the nine models below – the Model of Dissonance Theory, the Model of Conceptual Change, the Model of Dual Processes, the Model of Cognitive Restructuring of Knowledge, and the Cognitive-Affective Model of Conceptual Change.

6.1. The Model of Dissonance Theory

Festinger's theory on Cognitive Dissonance (Festinger, 1957) starts from cognitive consistency according to which individuals have the innate tendency to find a balance between their thoughts, attitudes and beliefs. Where there is a misbalance, there is also a tendency to restore the balance. The causes of dissonance are related to logical inconsistency or to the perception of a threat regarding an individual's expectations. The theory of dissonance and the changing of teachers' beliefs would start in the evaluation of one's activity in the classroom by the teacher as problematic (Wood, Cobb & Yackel, 1990). Seen like this, things seem to be easy to change, but there is no mention of such issues as the role of individual differences in change, the lack of validity, the lack of other factors involved in the change and, last but not least, the lack of studied on in-service teachers. A positive aspect is that of the place of stimuli: if a teacher perceives stimulus as coming from outside, change is less probable than in the case stimulus is perceived as coming from inside (Gregoire, 2003).

6.2. The Model of Conceptual Change

This model originates in the sciences of education and it emphasises the overwhelming importance of previous knowledge on teaching (Posner et al., 1982). The factors causing the changing of teachers' beliefs are (a) the relation between the lack of satisfaction towards existing conceptions and teaching and

(b) the presentation of new conceptions, particularly the adoption of teaching reforms, as plausible, productive, advantageous for the teacher and mainly intelligible. Adapting to constructivist methods is done through the assimilation of new experiences to the existing cognitive schemes and the adaptation of existing schemes to these experiences (Posner et al., 1982). One of the critiques of the model is supported by Patrick & Pintrich (2001) who claim that the model is too cognitive and that it does not take into account two very important factors – motivational and affective – that change teachers (Gregoire, 2003). Strike & Posner (1992) also claimed that their model is too rational and they recommended to also taking into account motivation and goal of change. It is very important to sustain the effort of change, which is dependent of revision of teachers' schemas (Patrick & Pintrich, 2001; Gregoire, 2003). The model of conceptual change does not bring forth explanations regarding the mechanism behind conceptual change but its strong point is the emphasis on the role of previous knowledge and of teachers' beliefs in the process of changing beliefs (Gregoire, 2003).

6.3. The Model of Dual Processes

As for the Theory of Dual processes, there are two routes of processing information when confronting an individual with persuasive messages: a central one and a peripheral one (Eagly & Chaiken, 1993). Processing along the central route supposes the use of systematic, deliberate processing (Kirby & Woodhouse, 1994) that is logical. In exchange, the peripheral route supposes relying on heuristics generated by the individual's previous experiences, on affective response, while making effortless decisions relying on the number of elements to be taken into account (Evans, 2008). Systematic processing produces long-term changes compared to heuristic processing (Petty et al., 1988). As far as the adoption of reforms in teaching is concerned, if a teacher is to make quick decisions, he/she will use heuristics when getting the message about the reform based on constructivist methods mainly due to the saving of time and effort necessary for systematic processing. To produce a change of beliefs, we need strong motivation, cognitive abilities and systematic processing of the message on change. The model explains the role of dual processes and why heuristic processing is more common. It also claims that teachers who lack the ability and motivation to process messages related to educational reforms will not achieve real changes of beliefs. The weak points of the model are the lack of explanations related to the role of emotions and evaluation in the changing of beliefs, the lack of a mention on the way of increasing motivation otherwise than by manipulating messages, and particularly the lack of studies on in-service teachers (Gregoire, 2003).

6.4. The Model of Cognitive Restructuring of Knowledge

This model developed by Dole & Sinatra (1998) supposes a combination between the Model of Dual Processes and the Model of Conceptual Change (Gregoire, 2003) and claims the importance of previous conceptions of the student, the mediating role of systematic processing in the change of beliefs, the existence of other motivation factors – the social context – as factors of change. The causes determining the change of beliefs are the features of the student, the features of the message and the level of cognitive processing of the individual (Gregoire, 2003). To change beliefs, teachers need to perceive the reform message as plausible, intelligible, and somehow mandatory and be themselves motivated to

adopt new teaching methods. These aspects suppose higher abilities of cognitive processing. As weaknesses, we need to mention the lack of explanations regarding the way in which the peripheral route affects the systematic route, the lack of information that might explain the importance of automatic evaluation intervening in the process of changing and, last but not least, the lack of studies on in-service teachers.

6.5. Fazio's Model (Relation between Attitude and Behaviour)

Fazio's model analyses the weaknesses of the Model of Cognitive Restructuring of Knowledge emphasising the automatic constructive nature of cognitions in the sphere of attitudes (Fazio, 1986). Fazio claims that interpreting an individual is strongly affected by the interpretations of the others of a given situation, in which an important role is played by the automatic processing in the changing of beliefs (Gregoire, 2003). He also emphasises the role of selective perception in the evaluation of situations/events and, for the first time, the role of individual differences in the generation of change. The causes of changing beliefs are the way one interprets events and subjective norms. Teachers can see messages related to the introduction of constructivist methods as little explained or too problematic to generate changes of beliefs (Glasersfeld, 2007). If a colleague who perceived the message in the same way intervenes during critical moment, he/she will not make any effort to change traditional teaching methods that he/she is, in general, satisfied with. The weaknesses of the model are the lack of taking into account emotions that intervene in the process of changing beliefs, the lack of studies on in-service teachers and the lack of information related to the mechanisms of change (Gregoire, 2003).

6.6. The Cognitive-Affective Model of Conceptual Change

Gregoire's model (2003) brings forth the importance of automatic evaluation in attitude change focusing on the cognitive processes that mediate attitudinal changes and on motivation and abilities affecting cognitive processes. It mentions the way in which peripheral routes affect cognitive processing, the role of individual differences (as in Fazio's Model) and it identifies, for the first time, the goals depending on the context as mediators of information processing. Negative evaluation is not seen as an aversive state or as a threat but as a challenge. The causes generating change are the way in which messages are presented, if the message involves the self of the teacher, and a strong motivation for changing beliefs. The weakness consists in the lack of ways/arguments of making teachers switch from superficial changes of beliefs (through assimilation) to true changes (through accommodation). It also does not mention the ways of making teachers improve their ability of reflecting on the issue of change.

6.7. The Model of Teacher Change

The model of Guskey (2002) claims, in the context of the role of the teacher in the training and development of the students, that approach, knowledge and practice are the main elements in understanding teachers' beliefs and the factors that impacts their beliefs (Mkomange et al., 2012). In this model, the cause that generates the change of teachers' beliefs and attitudes is the change of students' results. Students change because of the change of their teachers' practice. The weaknesses of the model are the lack of evidence to support the students' changes generated by the teachers' changes and the fact

that the mere attendance of personal development courses does not guarantee changes in the teachers' practice.

6.8. The Improved Conceptual Model for Teachers' Beliefs

The model of Mkomange *et al*. (2012) is an improvement of Guskey's model (2002). It claims that, if teachers understand well how to approach the solution of mathematics problems, they will develop beliefs and positive attitudes towards mathematics. Attending training sessions for the up-date and upgrading of problem solving abilities will help students develop their problem solving abilities (Mkomange *et al*., 2012). The model presents as causes of change the teachers' gender that generates both positive or negative beliefs, and teachers' practice changes and students' result changes. The weaknesses of the model consist in the lack of studies on other teachers than teachers of mathematics (a mainly male field). The model cannot be applied to teachers that teach disciplines without stereotypes.

6.9. The Reflective, Collaborative Model

Richardson's model (1998) claims that reflection and change are an ongoing process of evaluation of beliefs, results and, last but not least, of goals. The goal of the model is to develop an ecology of thinking, deliberation and experiencing: teachers become more confident in their ability of making decision and taking responsibility for their classroom practice. Teachers are free to design their own direction of change. The factors of change are teachers' reflections on classroom practice. The weaknesses of the model are the overrated autonomy of certain schools and course duration (three years, i.e. an increased risk of dropout).

7. Conclusion

The results of the study support the interest manifested in the last five decades in this very complex and delicate topic – changing teachers' beliefs. If the first studies supported the idea that teachers do not change, recent studies claim the contrary by presenting different models of belief change. Each of the nine models of change support certain aspects considered important or necessary in changing: they test in most cases pre-service teachers, which is one of their weaknesses.

Presenting the nine types of changing teachers' beliefs is an advantage for school principals and professional development course organisers who can choose, depending on the psychological profile of their teachers, the best-suited model or the model accepted and appreciated by the teachers.

After analysing the nine models of belief change, we recommend the development of a genuine model of changing teachers' beliefs to be applied to in-service teachers to improve the weaknesses of the models presented in detail above. Other factors determining or mediating teachers' belief change should be analysed to broaden the range of options for all the educational factors involved.

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