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Analysis of the impact of self-efficacy beliefs on the integration of ICTs by student teachers in a classroom setting

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CONTEXT Self-efficacy, the beliefs in one's capabilities to organize and execute the sources of action required to manage prospective situations (Bandura, 1986) should influence the choices one makes, the effort put forth and how long one persists when confronted with obstacles or failures. For Bandura (1997), self-efficacy is both context-limited and action-specific. It also comprises two components : efficacy expectations and outcome expectations. Efficacy expectations refer to the belief in one's capacity to achieve a given action in a specific context. Outcome expectations refer to the belief that the action performed will result in a particular, desired outcome. PROBLEM As Albion (1999) argues, the focus on information and communication technologies (ICTs) in education has shifted towards curriculum integration. Consequently, teacher education programs need to prepare new teachers to use ICTs in their teaching. This has been quite a challenge for teacher training programs in Canada, and in particular in the province of Quebec, where various curriculum reforms have taken place in the past ten years, and where recent studies highlighted numerous on-going problems with the integration of ICTs by prospective teachers (Haughey, 1999). OBJECTIVE Though many such as Albion (1999) theoretically argued the impact of self-efficacy on the use of computers by prospective teachers, few empirical studies have actually been conducted to examine this. Thus, the goal of the present study was to understand, empirically, the impact of self- efficacy beliefs (efficacy expectations and outcome expectations) on the use of ICTs by prospective teachers during their field practice. METHOD With the financial support of the Social Sciences and Humanities Research Council of Canada, we decided to conduct one of the largest studies in North America centered on various aspects of the use of ICTs by student teachers. The study consisted of a questionnaire composed of several validated scales, including a scale developed by Deaudelin, Dussault and Brodeur (2001) which includes two subscales respectively measuring efficacy expectations and outcome expectations (both components of self-efficacy) regarding the integration of technologies. The questionnaire was administered to prospective teachers in all but one (6 out of 7) Quebec (Canada) universities offering teacher education programs in the Winter semester of 2002. In all, 6987 student teachers completed the questionnaire. Interviews were also carried out with 32 participants. They were analyzed using N'Vivo 2.0 through a process called ethnographic content analysis (Altheide, 1987). This type of content analysis uses many of the traditional content analysis procedures, but also the back-and-constant comparison that grounded theory applies (Tesch, 1989). RESULTS Statistical analyses were conducted in order to assess the impact of self-efficacy beliefs on the use of ICTs during the practicum. Use of ICTs was grouped into four categories: (1) non-users (never used ICTs during the practicum); (2) low users (used ICTs once per week or less); (3) users (used ICTs from 2 to 4 times a week); (4) high users (used ICTs more than 5 times a week). Correlations among students' self-efficacy scores for the two subscales and use of ICTs reveal that self- efficacy is highly and positively related to computer use ($r = 0.56$, $p < 0,0001$). Our results, as they show a strong relationship between the belief structure of prospective teachers and their behavior (use of ICTs during their practicum, even when they encounter various problems), could also have important implications for teacher education programs, teacher trainers, universities, school principals, school districts and policy makers.

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back

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