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Socio-Pedagogical Issues Affecting Computer Assisted Instruction and Learning

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Abstract

Empirical studies dealing with the relationship between socio-pedagogical and attitudinal variables on the one hand and computer related variables on the other have consistently indicated that not all teachers relate in the same positive way to the use of computers in the educational situation. It appears that certain socio-pedagogical variables characterising teachers are related to positive computer related attitudes whereas other social and pedagogical variables or attitudinal constructs are connected to less positive computer related attitudes. In light of the socio-pedagogical variables conducive to efficient computer use by teacher in the classroom, it is suggested that the introduction of computers into the educational system should take the socio-pedagogical and attitudinal variables of teachers into consideration in order to achieve as efficient utilisation of computers as possible.

Keywords

Attitudinal variables, computer related variables, computer utilisation, socio-pedagogical variables.

1 INTRODUCTION

One of the three main areas in which the computer can bring about positive change within the educational system is that of instruction (the other two being administration and auxiliary specializations). Thus teachers are in the forefront of the technological revolution that is overtaking the educational system and have the potential to increase efficiency within the teaching process by effectively utilising the computer in computer assisted instruction which can include the use of drill and practice, spreadsheets, wordprocessing, multimedia as well as the use of individualized open software programs for the benefit of heterogeneous learning groups. Schools are under increasing pressure to respond to the rapid changes occurring in modern society and as a result teachers will have to play an increasingly central role in utilising computers for the benefit of their pupils. Social research has drawn attention to the crucial role of

Y. J. Katz et al. (eds.), *The Impact of Information Technology*

computer-related attitudes in influencing the extent to which teachers utilise computer technology (Anderson, Hansen, Johnson & Klassen, 1979) and develop computer literacy (Dyrd & Koohang, 1989). For maximum benefit to be derived from investment in computer technology in schools, it is important for educational planners and administrators to be aware of the computer-related attitudes of teachers and the connection these attitudes have with effective computer use.

2 AGE AND SEX

The two individual differences most commonly discussed in the literature concerned with computer-related attitudes are age and sex. The empirical findings, however, are far from conclusive in relationship to either of these variables. Some studies report that more positive computer-related attitudes are held by men than by women. This was found to be the case among primary trainee teachers (Griswold, 1983), undergraduate students (Sigurdsson, 1991) and teachers (Loyd & Loyd, 1985). Another set of studies, however, failed to find any significant sex differences in attitudes towards computers among trainee teachers (Woodrow, 1991), undergraduate students (Rosen, Sears & Weil, 1987) and teachers (Marshall & Bannon, 1986). Similarly, while some studies find higher levels of computer anxiety among females than among males (Igbaria & Chakrabarti, 1990) other studies find no sex differences in computer anxiety (Rosen et al, 1987). What is clear, however, is the absence of evidence to suggest that women may have more or less positive computer-related attitudes than men.

Research on the relationship between computer-related attitudes and age is less easy to synthesise than the data on sex differences, in view of the restricted age ranges of many studies and the lack of comparability between studies employing different psychometric instruments among different age groups. One study of adult basic education students reported that being older is associated with less positive attitudes (Lewis, 1988). Other studies of both students and educators reported a more positive attitude with increasing age (Katz & Offir, 1988; Marshall & Bannon, 1986). On the other hand, no relationship with age was found among student teachers (Woodrow, 1991), among college students (Arthur & Olsen, 1991), or among teachers (Gressard & Loyd, 1985). Similarly, while some studies found a positive correlation between levels of computer anxiety and age (Rosen et al, 1987), other studies found no relationship between computer anxiety and age (Igbaria & Chakrabarti, 1990).

3 PERSONALITY

Although personality theory provides a potentially powerful tool for accounting for individual differences in attitudes, little attempt has as yet been made to locate computer-related attitudes within a coherent model of personality, apart from two recent studies which employ the model of personality developed by Hans Eysenck (Sigurdsson, 1991). Eysenck's model of personality, developed, modified and refined over the past four decades (Eysenck & Eysenck, 1985), maintains that personality differences may be most adequately and economically expressed in terms of a small number of higher order factors, built up from the observed correlations between

primary and lower order traits. In its present form the theory proposes three higher order factors, namely neuroticism, extraversion and psychoticism. These three major dimensions of personality have been operationalised, together with a lie scale, in the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975). These instruments have been translated into a number of other languages (Barrett & Eysenck, 1984), and have had a significant influence on the study of personality and individual differences (Gibson, 1981).

The high scorer on the neuroticism scale is characterised as an anxious, worrying individual, who is moody and frequently depressed, likely to sleep badly and to suffer from various psychosomatic disorders. The main characteristic of the high scorer is a constant preoccupation with things that might go wrong, and with a strong emotional reaction of anxiety to these thoughts. Current research suggests that a positive attitude towards computers is inversely related to computer anxiety (Gressard & Loyd, 1986), while specific computer anxieties are related to trait anxiety and to neuroticism (Francis, 1994). These relationships suggest a negative correlation between neuroticism and computer-related attitudes. This hypothesis is supported by Sigurdsson (1991) as well as by Katz & Offir (1991) who testified that neuroticism and especially anxiety, social maladjustment and a lack of self-confidence are negatively related to positive computer orientations.

The high scorer on the extraversion scale is characterised as a sociable individual, who likes parties, has many friends, needs to have people to talk to and prefers meeting people to reading or studying alone. The typical extravert craves excitement, takes chances, acts on the spur of the moment, is carefree, easy-going, optimistic, and likes to `laugh and be merry'. Current research suggests that a positive attitude towards computers may reflect a preference for solitary activities and an avoidance of social interaction (Alspaugh, 1972), while extraversion is clearly characterised by a preference for group activities and an avoidance of solitary activities (Eysenck & Eysenck, 1975). These relationships suggest a negative correlation between extraversion scores and computer-related attitudes. This is consistent with Bozeman's findings which reported some relationship between extraversion and apprehension of computer technology (Bozeman, 1978). Both Sigurdsson (1991) and Katz and Francis (1995), however, found neither a positive nor a negative relationship between extraversion and attitudes towards computers. On the other hand Katz & Offir (1991) found that extraversion and most especially the traits of loudness, boisterousness, and sociability were related to positively oriented computer related attitudes.

The high scorer on the psychoticism scale is characterised as cold, impersonal, hostile, lacking in sympathy, unfriendly, untrustful, odd, unemotional, unhelpful, lacking in insight, strange, and with paranoid ideas that people were against him (Eysenck & Eysenck, 1976). Particular attention is focused on the characteristic absence of certain emotions from high scorers on the psychoticism scale, namely, empathy, feelings of guilt, sensitivity to other people are notions which are strange and unfamiliar to them. Current research suggests that a positive attitude towards computers is positively related to a general tendency towards venturesomeness and a willingness to take risks in personal and professional spheres (Offir & Katz, 1990), while risk taking and venturesomeness are associated with impulsivity (Pearson, Francis & Lighbown, 1986)

and impulsivity is associated with psychoticism (Rocklin & Revelle, 1981). In addition, Katz & Offir (1991) found that psychoticism and most especially the traits of impulsivity, craving of change, as well as stimulus- and sensation-seeking, are significantly related to positive attitudes of teachers towards the use of computers for instruction in the classroom situation. These relationships suggest a positive correlation between psychoticism scores and computer-related attitudes. Katz and Francis (1995), however, reported a significant negative relationship between psychoticism and attitude towards computers among teacher trainees.

4 RELIGIOSITY

Possibly as a consequence of secularisation (Wilson, 1982) and the compartmentalisation of religious belief (Bibby, 1987), religiosity is generally ignored in social and educational research. Nevertheless, a number of recent studies has begun to reassert the value of taking religiosity seriously in predicting and understanding individual differences in a range of areas. For example, empirical studies have established the significance of religiosity in predicting individual differences in such diverse areas as general well being (Hay & Head, 1987) and attitude towards school (Francis, 1992).

While little research has specifically examined the relationship between religion and attitude towards computers, both variables have been incorporated in research concerned with identifying the social attitudinal correlates of conservatism. Studies among adults (Eysenck, 1976) have consistently located computers within the domain of liberal or radical attitudes and religiosity within the domain of conservative attitudes. These findings lead to a hypothesised negative correlation between attitude towards computers and religiosity.

5 TEACHER TRAINING

Can training courses specifically designed to help teacher trainees understand the advantages of computer assisted instruction and to provide them with the technological knowhow necessary to utilise computer based software in their teaching processes improve the effectiveness of computer use in the teaching situation? Can teacher trainees be socialized during the course of their training into adopting positive attitudes towards computer assisted instruction? Hubara (1986) has gone so far as to suggest that teacher training courses may even discourage the will to innovate and introduce changes. Similarly, Katz & Offir (1991) found that while teachers believed that the utilisation of computers in the teaching process is a definite innovation that can well lead to positive results, the will to introduce computers into the classroom is only as strong as the motivation of teachers to accomodate innovation and change. Thus attitudes in general and motivation in particular, rather than teacher training courses, are the key prerequisites to the successful initiation of any type of reform in teaching and instructional methods. Glasman & Nevo (1988) as well as Offir & Katz (1990) confirmed this notion as did Offir, Katz & Schmida (1991) who concluded from the results of a research project that teacher training courses on innovation and change in

teaching methods do not significantly motivate practicing teachers to innovate and change in their instructional methods. Thus it appears that social attributes rather than in-service teacher training courses are key elements in the motivation of teachers to introduce innovation and change into the instructional process.

6 CONCLUSION

The body of evidence presented above indicates that socio-pedagogical and attitudinal variables are related to positive computer related attitudes of teachers. In addition, on the basis of empirical evidence it is postulated that training courses designed to socialize teacher trainees into adopting a positive attitude towards computer assisted instruction and to equip teachers with the necessary technological knowhow in order to effectively utilise the computer in the instructional process achieve their goals only if the participating teachers or teacher trainees are typified by social and attitudinal variables conducive to effective computer use. Therefore it may be advisable to examine teachers' basic socio-pedagogical and attitudinal attributes so as to evaluate their suitability to effective computer usage. If the teachers using computers in the instructional process possess the socio-pedagogical attributes which promote positive computer oriented attitudes, then the chances of achieving the dream of an educational revolution through the use of computers in the classroom may finally be realised.

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