Relationships of attitudes to personality and social factors education essay

Education

Although there is no standard definition of the term attitude, in general it refers to a learned predisposition or tendency on the part of an individual to respond positivelyor negatively to some object, situation, concept, or another person. Definitions of attitude towards mathematics are numerous as researchers' and thinkers'conceptions, ideas and perspectives vary. Five dimensions of attitude namely: students' confidence about theperformance, students' belief on the usefulness , the degree ofstudents enjoying working, the beliefs of students on ability and performance ongender bases, the beliefs and expectations of teachers have on the students'ability and performance in mathematics. When a definition is explicitly given, or can be inferred, it mainly refers to one of the three followingtypes: 1. A ' simple' definition of attitude, that describes it as the positive or negative degree of affectassociated with a certain subject. According to this point of view the attitude toward mathematics isjust a positive or negative emotional disposition toward mathematics (McLeod, 1992; Haladyna, Shaughnessy J. & Shaughnessy M., 1983). 2. A multidimensional definition, which recognizes three components in the attitude: emotionalresponse, beliefs regarding the subject, behaviour related to the subject. From this point of view, anindividual's attitude toward mathematics is defined in a more complex way by the emotions thathe/she associates with mathematics (which, however, have a positive or negative value), by theindividual's beliefs towards mathematics, and by how he/she behaves (Hart, 1989). 3. A bi-dimensional definition, in which behaviours do not appear explicitly (Daskalogianni & Simpson, 2000): attitude toward mathematics is therefore seen as the pattern of beliefs and emotions associatedwith mathematics.

(ROSETTA)According to a point of view, the attitude towardsmathematics is just a positive or negative emotional disposition towards mathematics (Zan &Martino, 2007).(AKINSOLA)Attitudes are psychological constructs theorized to be composed of emotional, cognitive, and behavioral components. Attitudes serve as functions including social expressions, valueexpressive, utilitarian, and defensive functions, for the people who hold them (Newbill, 2005). (AKINSOLA)Hart (1989), considering attitudes towards mathematics from a multidimensionalpoint define an individual's attitude towards mathematics as a more complex way by theemotions that he/she associates with mathematics, his/her beliefs towards mathematics, whichcould be either positive or negative and how he/she behaves towards mathematics. (AKINSOLA)

The Relationships of Attitudes to Personality and Social Factors

Student Related VariablesBenham (1995) reviewed studies relating students' self-perceptions and academic achievement. When students believed that their academic performance was the consequence of their own actions (e. g., studying hard, perseverance, motivation) rather than the consequence of factors out of their control (e. g., good luck, innate ability), they had better academic performance.(Attitude 1)student-related variables, such as students' perceptions, success attribution and attitudes that can furtherinfluence access to post-secondary and occupational opportunities (Reynolds, 1991). These variables also predict mathematics avoidance on the part of students, whichaffects long-term achievement and career aspirations in the mathematics field(Helmke, 1989; Reynolds & Walberg,

1992). Thus, understanding the role of suchvariables in maths achievement has attracted serious attention in recent years.(HIND)students with apositive self-perception of maths importance tended to be high performers inmathematics (Ma, 1995; Howie, 2002). (HIND)Anxiety and AttitudeMath anxiety has been found to have a negative relationship with mathematics performance and achievement (Ho, Senturk, Lam, Zimmer, Hong, Okamonto, Chui, Nakazawa, &Wang, 2000). Math anxiety is a condition in which students experience negative reaction to understand mathematical concepts and evaluation methods(Cates&Rhymer, 2003). Mathematics educators tend to believe that children learn more effectively when they are interested in what they learn and they achieve better if they like what they learn(Ma & Kishor, 1997). Thus students who come to enjoy mathematics, increase their intrinsic motivation to learn, and vice-versa. It is obvious; therefore, that continual attention should be directed towards creating, developing and reinforcing positive attitudes towards any subject of the curriculum (Pintrich, 1999; Middleton & Spanias, 1999). There is an increasing recognition that affective factors play a critical role in the teaching and learning of mathematics (McLeod, 1992, 1994). One affective factor that " has probably received more attention than any other area that lies within the affective domain" is anxiety toward mathematics (McLeod, 1992, p. 584). Aiken(1960) considered mathematics anxiety a " relative" of the general attitude toward mathematics, only being more visceral. Most researchers, however, consider mathematics anxiety to be a construct that is distinct from attitude toward mathematics. For example, McLeod (1992) stated that the term attitude " does not seem adequate to describe some of the more intense feelings that

students exhibit in mathematics classrooms" (p. 576), such as anxiety, confidence, frustration, and satisfaction. Mathematics anxiety is often referred to as " the general lack of comfort that someone might experience when required to perform mathematically" (Wood, 1988, p. 11) or the feeling of tension, helplessness, and mental disorganization one has when required to manipulate numbers and shapes (Richardson & Suinn, 1972; Tobias, 1978). Mathematics anxiety can take multidimensional forms including, for example, dislike (an attitudinal element), worry (a cognitive element), and fear(an emotional element) (see Hart, 1989; Wigfield & Meece, 1988). Cemen (1987) also defined mathematics anxiety as an anxious state in response to mathematics-related situations that are perceived as threatening to self-esteem. In her model of mathematics anxiety reaction, environmental antecedents (e. g., negative mathematics experiences, lack of parental encouragement), dispositional antecedents (e. g., negative attitudes, lack of confidence), and situational antecedents(e. g., classroom factors, instructional format) are seen to interact to produce an anxious reaction with its physiological manifestations (e. g., perspiring, increased heart beat) (RESEARCH PROPOSAL 2)Socio-economic BackgroundParental InfluencesAccording to Poffenberger and Norton (1959), parents affect the child's attitude and performance in three ways: (1) by parental expectations of child's achievement, (2) by parental encouragement, and (3) by parents' own attitudes.(LEWIS)More direct information on the relationships of student attitudes to parental expectations andattitudes was obtained by Alpert et al. (1963) and Hill (1967). Alpert et al. (1963) developed a parental interview and questionnaire to determine the extent to which parental attitudes and

values were consistent with those of the School Mathematics Study Group and how much they affected the attitudes of their seventh-grade children toward mathematics. These were the results: (1) student attitudes, for both boys and girls, were positively correlated with the amount of mathematics education desired by parents for their children; (2) boys' attitudes were positively correlated with the importance which their parents placed on grades and withparental demands for higher grades, whereas girls' attitudes toward mathematics were negatively related to the importance that their parents placedon mathematics; and (3) student attitudes for both boys and girls werepositively correlated with parents' views of competition as good and asnecessary in the modern world. (LEWIS)Gender DifferencesKoller, Baumert, and Schnabel (2001) studied gender differences in mathematics achievement, which favored males in achievement, interest, and placement in advanced math courses.(ATTITUDE 2)No one would deny that sex can be an important moderator variablein the prediction of achievement from measures of attitudes and anxiety. The results of several of the investigations discussed thus far (e. g., Aiken& Dreger, 1961; Reese, 1961) suggested that measures of attitudes andanxiety may be better predictors of the achievement of females than ofmales. Mathematics has traditionally been viewed as more of a man'sinterest or occupation, and consequently one might expect that males wouldscore higher than females on tests of ability and achievement in mathematicsand on scales of attitude toward mathematics(LEWIS)Boys have traditionallybeen viewed as better than girls in problem solving (see Sweeney, 1954) (LEWIS)Elton and Rose (1967) tested the hypothesis that girls avoid mathematicsbecause they view it as a

masculine activity(LEWIS). Males are more inclined towardsmathematics than females on being the male dominated domain. It is foundthat at secondary school level most of the girls don’t actively participate inmathematics classes due to their poor perceptions about mathematics. Girlsare negatively influenced by their sex-role stereotypes (Boswell, 1979; Fennema and Sherman, 1977; Sherman, 1882; Leder, 1982 and Ethington, 1992).(muhamad)Sometimes female students’ showless confidence in mathematics than their male counterparts. Theirattributions of failure and success also differ (Leder, 1984; Subotnik, 1988; Cohen and Kosler, 1991; Hanson, 1992; Dickens and Cornell, 1993). (muhamad) Several studies gives evidence that compared to boys, girls lack confidence in doing mathematical sums and viewed mathematics as a male domain (Meelissen & Luyten, 2008; Odell & Schumacher, 1998; Hyde, Fennema, Ryan, Frost, & Hopp, 1990). (LAWSHA)

Teacher Characteristics, Attitudes. and Behavior

Fisher and Rickards (1998) found that students’ attitudes towards mathematics tended to be more positive in classrooms where students perceived greater leadership and helping/friendly behaviours in their teachers, and more negative in classrooms where students perceived their teachers as admonishing and enforcing strict behaviours. Studies have shown that factors such as motivation and attitude have impacted student achievement (Cote & Levine, 2000; Singh, Granville & Dika, 2002)." Surprisingly, level of mathematical ability was not related to experience at all" (Schiefele & Csikszenmihalyi, 1995). This study suggests that teachers should create more interest in order to improve motivation ." Teachers can

reinforce the idea that mathematics is an interesting subject, used in other disciplines and is an admission ticket for colleges and careers . Teachers could have working professionals to visit the classes and share how they use mathematics in their profession"(Anderson, 2007)." If teachers hold high expectations and present students with challenging mathematics then students may be more likely to enjoy mathematics and recognize its usefulness. Teacher’s choice of activities and mathematics problems can have a strong impact on the values that are portrayed in the classroom and on how students view mathematics and its usefulness" (Wilkins&Ma, 2003) (research proposal 2)It is generally held that teacher attitude and effectiveness in a particularsubject are important determinants of student attitudes and performancein that subject. As an example of research bearing on thissupposition, Torrance et al. (1966) studied 127 sixth- through twelfth grademathematics teachers who participated in an experimental programto evaluate SMSG instructional materials. Pre- and post tests of educationaland mathematical progress, aptitude, and attitude were administered tothe teachers and their pupils. The result was that teacher effectivenesshad a positive effect on student attitudes toward teachers, methods, andoverall school climate. It is also true that students who do not do well in a subject maydevelop negative attitudes toward that subject and blame their teachersfor their failures, even when the teachers have been conscientious. (lewis)

Instructional Method and Curriculum

Rote Memory vs. Meaningful Teaching

In a discussion of a variety of unpleasant experiences in the earliergrades that cause students to avoid high-school mathematics, Wilson (1961)concluded that a primary cause is " drill beyond the fundamental processes." Bernstein (1964) apparently concurred with Wilson's conclusion thatmathematicians and teachers are almost universally agreed that rote learningprocedures are a major factor in producing negative attitudes towardmathematics. Collier (1959) also maintained that teachers should emphasizecomputational speed less and place more stress on developing mathematicalunderstanding and logical reasoning ability. (LEWIS)Studies related to instructional practices and academic achievement have suggestedthat the quality of teachers' instructional messages affects children's task involvement andsubsequent learning in mathematics (Cornel, 1999, Butty, 2001). (AKINSOLA)Schoenfeld (1992) compiled a list of beliefs that many students hold, such as there is only one way to solve a mathematical problem, most students can simply memorize mathematics rather than be expected to understand it, and if a problem cannot be solved quickly then it cannot be solved.(NCTM)The National Council ofTeacher of Mathematics (NCTM, 2000) has advocated for the development of inquiry-basedmathematics tradition. (AKINSOLA)

Development and Modification of Attitudes

In the study by Stein, Grover, & Henninssen(1996), investigated the use of enhanced instructions as a means of building student capacity formathematics thinking and reasoning concluded that students must first be

provided withopportunities, encouragement, and assistance before they can engage in thinking, reasoning, andsense making in mathematics classroom. Consistent engagement in such thinking practices, theymaintained, should lead students to a deeper understanding of mathematics as well as increasedability to demonstrate complex problem solving, reasoning, and communication skill uponassessment of learning outcomes. (AKINSOLA)It is therefore imperative for teachers to appreciate and inculcate in students positiveattitude towards mathematics by using improved and appropriate instructional strategy. It isbelieved that the lack of specific directives has one way or the other hindered learningachievement among students. As this review has shown, there has been only a small amount ofresearch on techniques for developing positive attitudes and modifyingnegative attitudes toward mathematics. Bassham, Murphy and Murphy(1964) pointed to the desirability of further experimental work to explorethe development and modification of anxiety, attitudes, and other variableswhich affect achievement in mathematics. More than three dozen journal articles, two dozen doctoral dessertations, and a half-dozen reports of studies concerned with attitudes towardmathematics which have been written during the past decade were re-viewed. The major topics covered were: methods of measuring attitudestoward arithmetic and mathematics; the distribution and stability of mathematicsattitudes; the effects of attitudes on achievement in mathematics; the relationships of mathematics attitudes to ability and personality factors, to parental attitudes and expectations, to peer attitudes, and to teachercharacteristics, attitudes and behavior. It is clear that serious thought must be given to experiments concernedwith temporary and more

permanent effects of preschool and early schoolexperiences on attitudes toward and performance in mathematics. In boththe development and modification of attitudes, and in training and remedialwork, a question is how to make mathematics more interesting. (LEWIS)