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Social skills of physics students in the mathematics degree program

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Abstract. The research had as objective to identify the social skills of first semester students of the mathematics program of Universidad Francisco de Paula Santander, Colombia, assigned in the subject of physics I, with a sample of 21 participants between 17 and 21 years old of the stratum 1 and 2, from which only 4.8% of the students work and study, the remaining 95.2% only study. 57% of the participants are women and 47% men, it is also evident that they currently reside in San José de Cúcuta, Colombia, the research under the positivist paradigm with a quantitative approach of quasi-experimental design of descriptive type, were applied: the questionnaire of the scale of social skills, and test of attitudes in physics which is constructed by 50 items that classify the social skills in 6 groups and 20 items in the test of physical attitude with a reliability in the alpha index of 0.79. The statistical software SPSS version 23 was used for data analysis and the Google form tool for data collection.

1. Introduction

Social skills are usually an important point in the personal and professional life of individuals, since they strengthen interpersonal and interpersonal relationships, which is why each subject throughout life manages to exercise and strengthen these skills through communication, noting that the mastery of these skills is directly to the proper management of emotions which implies self-control, self-esteem, self-confidence and maintain balance in any situation of daily life [1].

In turn, social skills and emotions are directly related to the individual's behavior, as defined in [2], the behavior that is manifested in a verbal and non-verbal way, observable in the different situations of interaction that a person has with the other, with the context and society, being these in turn the specific responses, since its behavior and effectiveness depends on the concrete context of the interaction and the parameters in which it is activated.

On the other hand, [3] they affirm that deficits in social skills are configured by difficulties in the acquisition of social behaviors, since the behaviors may come from an interference in the cognitive processing of social information, related to an inhibited or uninhibited temperamental expressiveness in the same way that they define it [4], agree that the family is the first entity that regulates emotions and the development of social skills, followed by the school, since it is the first extra-family context that children have to relate to people and strengthen interpersonal relationships, as well as in school and



university [5]. He affirms that this series of scenarios and contexts strengthen the social skills for appropriate behavior in day-to-day work contexts.

Social skills are closely related to the development of children and adolescents, as they allow them to promote good academic, psychological and social functioning. In a research conducted by [6], it was found that aggressive and underachieving adolescents have a low level in three areas of social skills: The skills related to feelings, alternative skills to aggression and planning skills, this is because they are also characterized by poor control of aggression and the need for dominance and control over others and low motivation to study. Therefore, it is important to identify the social skills and the level or attitude performance in the subject of Physics of the first semester students assigned to the subject of physics I, in the academic program of the degree in mathematics of the Universidad Francisco de Paula Santander, Colombia, since it allows us to find the level of social skills and the level of performance in physics, since it allows us to find the weaknesses, strengths of these skills and the levels of performance that students have in physics, in the same way in subsequent research to build strategies for strengthening levels of social skills and performance levels in the subject of physics I.

Similarly, in the research conducted by [3,7-10], they identified social skills and related it to different behaviors such as suicide risk, aggressiveness, inclusion risk, educational practices, communication processes and academic performance in different disciplines. Following the central idea, in the different educational models worldwide, innovative pedagogical models are strongly expanded. For this reason, researchers, teachers, and specialists in basic primary, secondary, and university education, focus their studies on social skills with the aim of identifying, promoting, and strengthening peaceful coexistence and democratic participation among people in the same way to strengthen the academic performance of students in the classroom [11].

For a long time they have investigated social competences, since there have been different definitions, dimensions and classifications, among which those taken for this research were [12], who claim that, in order to define any social competence, one must always take into account the changing social context, which in turn makes the development of a universal definition impossible. Social competence must be considered within a given cultural framework, just as communication patterns vary significantly between cultures due to the influence of factors such as age, sex, social class, and educational level, in addition, the degree of effectiveness that a person shows will depend on what he wishes to achieve in the particular situation in which he finds himself, that is, that he acts in accordance with his particular interest [13]. Likewise [4], it defines them as a set of behaviors and attitudes externalized by the individual in different interpersonal contexts, where a set of emotions, feelings, desires, appropriate or inappropriate opinions are expressed according to the situation, respecting or not respecting those behaviors in others, in turn immediately solving the problems of the situation, minimizing the likelihood of future problems.

Therefore, an important definition of social skills in this research is that of [14], who affirms that social skills are all those behaviors or conducts that are appropriate and necessary for interaction with respect to interpersonal relations with others in a socially affective, satisfactory and successful manner, which are divided into 6 groups of dimensions such as:

- Group I. First social skills. This dimension involves the indicators of listening, initiating a conversation, maintaining a dialogue, asking questions, thanking, introducing oneself, and presenting others.
- Group II. Advanced social skills. The dimension implies a set of indicators such as asking for help, it implies reinforcing and admitting social reinforcements, the student can verbalize his wishes and difficulties in a coherent way; participate, give instructions, follow indications, apologize, convince others, make a compliment.
- Group III. Skills related to feelings. This dimension encompasses the indicators of knowing your emotions, expressing your feelings, understanding the feelings of your peers, dealing with the anger of others, giving affection, resolving fear, rewarding yourself, giving thanks.
- Group IV. Alternative skills to aggression. This dimension is designed to employ the skills of self-control when, without entering into disputes, you know how to negotiate, know how to share,

respond to jokes, exercise self-control, defend your own rights" This dimension involves the indicators ask for permission, share something, help others, negotiate, defend your rights, avoid problems with subjects.

- Group V. Stress management skills. This dimension refers to the level of response to failure, managing to make a complaint, responding to a complaint, demonstrating sportsmanship after a game, dealing with embarrassment, coping with being left out, defending a friend, responding to persuasion, dealing with failure, dealing with conflicting messages, responding to an accusation, preparing for a difficult conversation, coping with pressure.
- Group VI. Planning skills. This skill involves successive facts or actions, assertive decision making, as well as identifying the cause of a difficulty, and goal setting, on the other hand, your skills, information selection, problem solving according to hierarchy, as well as concentration on tasks.

2. Methodology

The research was carried out under the positivist paradigm with a quantitative approach, as defined by him [15]. Due to the nature of the research, the data collected can be analyzed with statistical methods, as can the conclusions. The design of the research is non-experimental, transactional, since there is no manipulation of the variables, and the variables are analyzed in a spontaneous and natural way, as the facts are presented and only one moment was selected for the application of the questionnaire and the test and the collection of information [15]. The sampling method was non-probabilistic for convenience since the group was formed from the beginning of the academic semester.

The social skills scale by [16], composed of 50 items, divided by six groups distributed in group I from 1 to 8, group II from 9 to 14, group III from 15 to 21, group IV from 22 to 30, group V from 31 to 42, group VI from 43 to 50, validated by [17], and the attitude test in physics composed of 20 items which registers high reliability in the alpha index of 0.79.

3. Results

The population was made up of 240 students from 17 to 31 years old who are currently studying for a degree in mathematics at the Universidad Francisco de Paula Santander, Colombia. Statistical analysis showed: the distribution in 57% of women and 43% of men, in turn 52.4% of stratum 1 and 47.6% of stratum 2, with an age interval between 16 and 21 years of which only 4.8% of respondents work, while 95.2% do not work and only study. In relation to the social skills of the first group called "first social skills" the result was an average of 73.21 with a minimum of 56.25 and a maximum of 90.63 and a mode of 78.13 in the same way of the 21 respondents 61% were at the normal level 39% at the normal level while the deficient, low and excellent level remained at 0%.

Then in the second group "advanced social skills" was recorded with an average of 72.22, fashion 75.00, minimum 54.17 and maximum 100.00 also 9.5% was in normal level, 66.7% in good level, 23.8% in excellent level and 0% in low and deficient level; likewise, in the third group, "skills related to feelings", the average was 70.57, the fashion 64.29, the minimum 35.71 and the maximum 100.00, of which 4.8% was at a low level, 9.5% at a normal level, 57.1% at a good level, 28.6% at an excellent level and finally 0% at a deficient level. However, in the fourth group "alternative skills to aggression" registered an average of 75.66, fashion of 80.56, minimum of 55.56, and a maximum of 100.00, in the same way 4.8% in normal level, 47.6% in good level, 47.6% in excellent level and 0% in low level. On the other hand, in the fifth group "skills to face stress" showed an average of 69.94, fashion of 70.83, minimum of 54.17 and maximum of 100.00, in turn 14.3% in normal level, 66.7% in good level, 19% in excellent level, however, the low and deficient level remained at 0%.

Also, in the sixth group "planning skills" recorded an average of 75.74, fashion 71.88, minimum 53.13 and maximum 93.75, then 9.5% at normal level, 47.6% at good level, 42.9% at excellent level, plus the low and deficient level remained at 0%. Similarly, the results of the social skills recorded that the first place of the skills the 21 respondents were: 33.3% group IV , in second place: 28.6% group I

and VI, in third place: 24.0% group I and IV, in fifth place 27.3% group II and III, 18.2%, in sixth place: 23.8% group V.

Figure 1 shows that 66.7% of respondents according to Goldstein's categorization table, (1978). They are at the normal level which is between 78 to 156 points in the overall score, 33.3% at the good level between 157 to 204, then 0% at the excellent level between 205 and above, 0% at the low level between 26 to 77 and 0% at the deficient level between 0 to 25 points.

Figure 2 records that 0% of respondents are in higher performance between (91 to 100) points, 28.6% in high performance (80 to 90) points, 47.6% in basic performance (61 to 79), 23.8% in low performance (0 to 60), as well as a minimum score of 27, a maximum of 89, a mean of 65.77, and a standard deviation of 17.91.

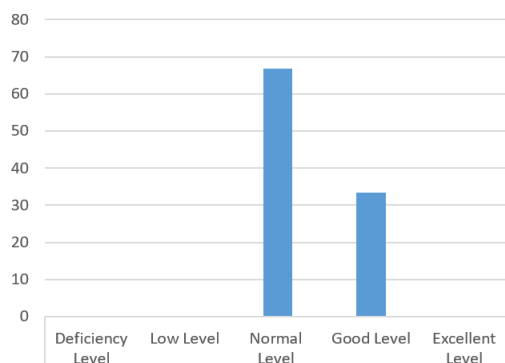


Figure 1. Social skills categories.

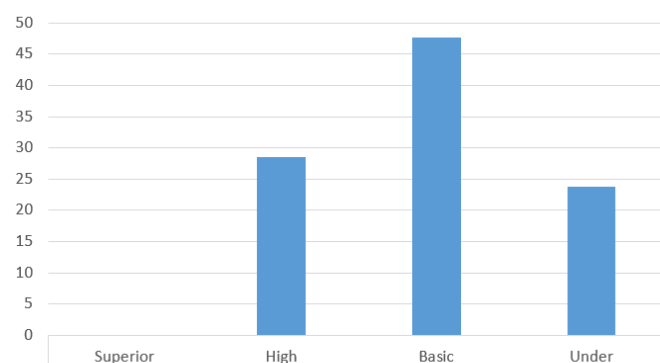


Figure 2. Attitude test in physics.

Table 1 showed that 9.52% high performance and good level in skills, 19.05% high performance and normal level in skills, 14.29% basic performance and good level in skills, 33.33% basic performance and normal level in skills, 9.52% low performance and low level in skills, 14.29% low performance and normal level in skills.

Table 1. Social skills and attitude in physics.

	Good level	Nivel normal
Attitude test in physics	High	9.52%
	Basic	14.29%
	Under	9.52%

4. Conclusions

It can be stated that students' predominant social skills are the alternative skills to aggression that allow them to ask for permission, share, help others, be a negotiator, have self-control, defend rights, avoid problems and not get into fights easily, that is, all these behaviors and qualities that a teaching professional must possess, so this skill is the highest for this research.

Then they possess the first social skills that allow listening, speaking, asking, thanking, presenting and performing, which determine the minimum an individual must have to socialize with others, they also possess the planning skills that allow: Take initiative, solve problems, set goals, determine one's own abilities, gather information, take initiative and concentrate on a task. University students have the capacity to carry out the activities of a professional, in the same way they should strengthen the skills related to feelings that allow them: to know their own feelings, to express their feelings, to understand the feelings of others, to express affection, to resolve fear and to share themselves.

They also have a low capacity to cope with stress, which allows them to: make and respond to complaints, demonstrate sportsmanship after games, resolve embarrassment, respond to failure, respond to an accusation, and cope with group pressure. This is because they have not been educated to deal with frustration or failure; it is worth mentioning that a large percentage of the respondents are at a good and normal level, in addition, all social skills, as these are behaviors that can be modified and improved.

As for the performance of attitudes in physics presented a high percentage in basic performance, then in high performance and finally in low performance, in the same way a large percentage of students who are in low performance have low level and deficient in social skills related to feelings and ability to cope with stress, it is clear that it must be stressed that the expression of feelings, overcome failure and interpersonal relationships are of vital importance to the academic performance of students.

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