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The Impact of GRIT on the Increase of Academic Motivation among 4th Grade Students

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Abstract

The current socio-economic trends leave a deep imprint on the educational process, directly influencing the evolution of the didactic methodology. One of the fundamental objectives of modern pedagogy is to teach the student to learn autonomously, throughout his whole life. This path of personality development must take place in motivating conditions, ensure a thorough training, with multiple connections to the fields of practical activity. Motivation is the foundation upon which educational success is built. It represents an important mental process because it triggers and drives the student's action.

Often, a student's success is attributed to their talent or luck in a particular field of activity, and (perhaps) less to the effort and perseverance invested. In order to have the success that students want, the three values that guarantee success on any level are perseverance, ambition and development, or in one word grit.

The purpose of this research was to develop, implement and test the effectiveness of an intervention program based on GRIT development activities regarding the development of academic motivation in 4th grade students.

Following the re-evaluation of the participants involved in this research, the results showed improvements both at the level of Grit and at the level of academic motivation. After calculating the effect size, the program demonstrated its efficiency obtaining a d between .30 and 2.05.

Keywords: academic motivation, educational intervention program, GRIT, primary school students

1. Introduction

Motivation in the school context is responsible for maintaining the direction of learning through the management and control of the effort invested in the academic task when obstacles appear in the way of its completion. Learning often involves goals that may compete with the

immediate desires of the individual, in which case there is a need to postpone them, control impulses and inhibit some tendencies. For example, the student skilled in self-regulation persists on a difficult task or reduces/eliminates the influence of disturbing factors (the noise in the study hall, the temptation to go out with friends, etc.), thus maintaining his cognitive engagement in learning - a fact that allows him to successfully complete the task. We differentiate, in this context, motivation and motivation regulation. (Pintrich, 2000).

When we talk about the motivation to learn, Brophy (2015) mentioned the following limits that lead to unrealistic expectations that all students will be motivated to learn all the teaching contents of all subjects: 1) attending school is mandatory and teaching the contents included in the plan and curriculum are not a choice of students, but are determined by society what students should learn; (2) teachers, at the same time, work with large group of students and cannot meet the individual needs of each of them. As a result, some students become bored, others may be confused or frustrated; and (3) student failures often produce not only personal disappointment but also public shame.

In order to transform the learning process into a meaningful one and become a product of life, certain studies oriented towards the nature of learning suggested taking into account the following variables: socio-emotional development (Ji et al., 2013), grit (Heckman & Rubinstein, 2001; O'Neal et al., 2019) and happiness (Askill-Williams et al., 2013).

Sarıçam et al. (2016) state that grit is an important and necessary factor in achieving socio-emotional development and success in all other areas of life and can be considered a socio-emotional skill or a moral value. Grit can be improved because it is linked to areas of development (Duckworth et al., 2007).

2. Theoretical Framework

2.1. Purpose in relation to motivation

The purpose is found in the objective, in what the subject aims to achieve through the learning activity. Currently, the goal is oriented to the motive and, once fixed, consolidates the motivation that imposed it. When the goal is external to the learning activity, the effectiveness of learning depends on the meaning that the proposed goal has for the person in question. In this situation it is about extrinsic motivation. In the situation where the purpose of the activity is internal, so learn because learning itself generates satisfaction, it is about a higher form of motivation -

intrinsic motivation. It is considered that students aim to achieve goals and that each goal is associated with certain behavior and certain beliefs. The students' behaviors depend on their desire to achieve a particular goal. In the absence of the learning goal, the student does not know where he is moving or the actions taken by him may lead in the wrong direction (Pintrich, 2000).

The motivation-goal relationship is marked by the goal orientation, which can be produced in two directions: (1) the goal that pursues learning itself, designated as the personal intention to improve skills and understanding, independent of performance and (2) the goal of completing the task, of performance, which expresses the personal intention to appear competent or performing in the eyes of others. The first type of goal motivates more strongly by the fact that individuals tend to improve their academic acquisitions, comprehension, self-appreciation for what has been acquired, regardless of some failures or clumsiness; seek valuable and challenging academic assignments; they are aware of the situations in which they need help from the outside and resort to it; they are supported by positive causal attributions. Learning goals favor deep learning, strategic processing of information, which leads to an increase in academic performance. The second type of goal refers to Ego goals or Self-enhancement goals and aim to achieve positive results that will be appreciated by others, strengthen personal status and attract the appreciation of colleagues. Students guided by these goals are very concerned about themselves and less motivated for learning itself. As a rule, they want to appear competent, avoid confrontations, minimize the effort put into learning, seek the approval of those around them. (Weinstein, 1996).

According to the strategic learning model proposed by Weinstein (1996), motivational and volitional control belong to the "will" component, and the relationship between motivation and will is explained as follows: motivation is concerned with forming the intention to learn something, and volitional control with protection of this intention to learn through the use of various strategies. On a personal level, the motivation for learning immediately implies the will to learn. Many times the student has to make significant efforts of will, he has to "want" to learn. The will to learn is not formed by itself. It is the result of a long educational process, which involves both the unswerving fulfillment of goals set by others in learning, as well as the fulfillment of goals set by the learners themselves. Exercising the will to learn gradually leads to a permanent desire to know more, to know more when the student's learning efforts are rewarded by the satisfactions that are found in the learning itself and lead to the feeling of success.

2.2. The role of grit in achieving academic success

Over the past decade, there has been a growing interest in identifying the factors that make students excel and be more successful compared to others of equal intelligence, particularly in the field of education (Duckworth et al., 2007). In addition to cognitive skills, talent, and opportunity, high achievers demonstrate a variety of non-cognitive or motivational characteristics such as: creativity, commitment, emotional intelligence, growth mindset, gratitude, self-confidence, and emotional stability (Duckworth, et al., 2007; Dweck et al., 2014). Such qualities have been found to positively influence academic achievement, social relationships, and psychological and physical well-being (Askell-Williams et al., 2013; Duckworth & Gross, 2014; Duckworth & Yeager, 2015; Ji et al., 2013; O'Neal et al., 2019). One of the non-cognitive factors that has received increased attention in recent years is the concept of *grit*.

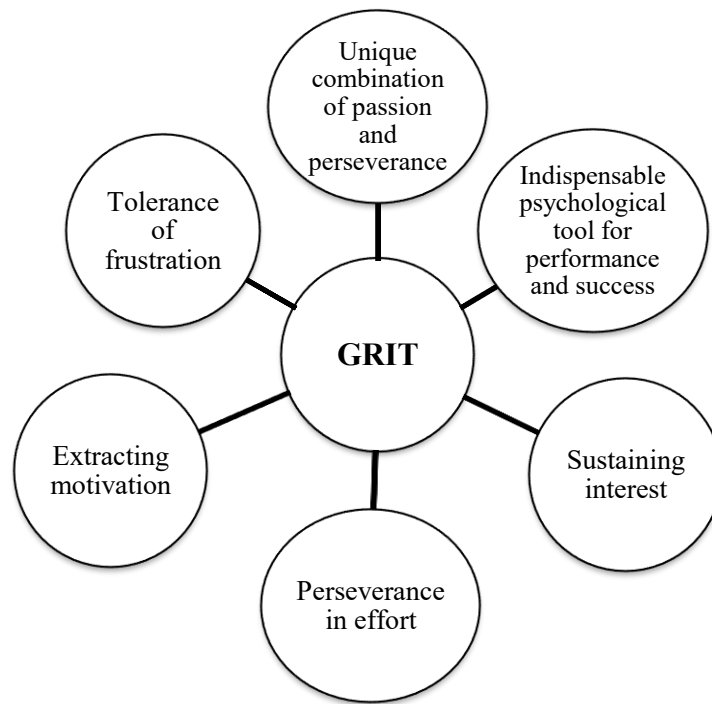


Figure 1. Definition of the GRIT concept

Grit has been introduced as a distinguishing characteristic visible in successful students (Duckworth, 2016), and it is a concept that should be considered both social and emotional, and some attention is paid to one's success in life (Brooks & Seipel, 2018). Grit can also be characterized as the enthusiasm and determination to achieve long-term goals despite difficulties

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and ailments, and it could be the dynamic personality strength for occasions when students face their own difficulties and concerns or when they face crucial circumstances (Lozano-Jiménez et al., 2021). In general, grit incorporates the ability to sustain both interest and effort in projects that may take some time to complete. Those who do not deviate from their original goals have a high level of courage (Duckworth & Quinn, 2009; Tough, 2012).

In addition to these aspects, certain studies have reported that grit is associated with academic success (Bowman et al., 2015), self-efficacy, self-regulation, metacognition (Rojas et al., 2012; Wolters & Hussain, 2015), self-control (Duckworth et al., 2015), depression, anxiety and stress (Lee, 2017; Özhan & Boyacı, 2018).

Today, "self-control" and "grit" are sometimes used interchangeably. However, despite the overlap in key underlying psychological processes, self-control and grit are not identical. Self-control, like the constructs related to ego strength, effortful control, and conscientiousness as a personality trait in the Big Five model, is associated with positive life outcomes (De Ridder et al., 2012; Hofmann et al., 2014). Prospective longitudinal studies have confirmed that higher levels of self-control earlier in life predict: later general and academic performance (Duckworth & Carlson, 2013; Mischel, 2014), prosocial behavior (Eisenberg et al., 2009), employment, earnings, economies, and physical health (Moffitt et al., 2011). In fact, self-control predicts many consequential outcomes at least as well as general intelligence or socioeconomic status (Duckworth & Seligman, 2005; Moffitt et al., 2011). Within the Big Five taxonomy of personality traits, grit shares content with the domain of conscientiousness (Rimfeld et al., 2016), as reflected in its conceptual relationship with several facets of conscientiousness-orderliness, reliability, self-control, and diligence (Duckworth & Eskeis-Winkler, 2015).

According to Duckworth (2016), there are four common psychological characteristics of Grit, which are: 1) *Interest* (passion begins with the feeling of intrinsic joy that what you do); 2) *Ability to practice*: a form of persistence it's the daily discipline of trying to do things better than yesterday. So, once you've discovered and developed an interest in a particular field, you must commit to focused, wholehearted practice designed to improve skills and overcome challenges that lead you to excellence.); 3) *Meaningful Purpose*: passion is fulfilled through the conviction that your work matters. 4) *Hope*: it is a kind of perseverance that pushes you to rise to the occasion.

Students' success depends primarily not only on proficiency tests, which aim to test learning abilities, but also on a limited set of academic skills (Sternberg et al., 2012). Positive psychology is a comprehensive academic field that focuses on elements that promote students' success and well-being (Wang et al., 2021; Zeng, 2021) and their psychological stability by enhancing optimal human performance (Lopez et al., 2015). To gain knowledge about the elements that lead to achievement and success, it is essential to assess people (Seligman, 2011; Pishghadam et al., 2023), because students with similar abilities and training can achieve equivalent academic success.

However, this type of success may vary from person to person (Dweck et al., 2014) in terms of their personality, IQ or effort. The potential to learn across learning domains has traditionally been linked to educational success at a variety of degrees, and there has been growing interest in this concept in a diverse range of settings. So, educational success depends on a multitude of interdependent factors and cannot be attributed to a single factor (Paat et al., 2020).

In order to preserve and certify student success, education is looking for other ways to establish and determine that it contains not only students' cognitive skills, but also their non-cognitive skills. Researchers and university administrators have widely recognized that the presence of social skills, such as communication, initiative, flexibility and perseverance, are essential for educational success (Farruggia et al., 2018) and these socio-emotional factors consist of traits or behaviors associated with student engagement and academic success (Sedlacek & Kalsbeck, 2017). As a moderately new construct in the educational field and within a PP paradigm, Grit embraces theories of passion and perseverance (Farruggia et al., 2018; Mattick et al., 2021; Wang et al., 2021), and is considered as a non-cognitive skill, which is known to predict success (Sommerfeld, 2011; Alan et al., 2019).

The purpose of this research is to develop, implement and test the effectiveness of an intervention program based on GRIT development activities regarding the development of academic motivation in 4th grade students.

The hypothesis from which we started in carrying out this research is: It is assumed that the educational intervention program based on GRIT will lead to an increase of academic motivation among fourth grade students.

3. Methodology

3.1. Participants

The participants of this study were 60 students aged between 11 and 12 years, students of "Bârsău de Sus" Middle School from Satu Mare County and "Lucian Blaga" Middle School from Maramureș County.

The participants were divided following the interpretation of the answers to the applied questionnaires into two groups: experimental one (N=30) and control one (N=30).

3.2. Measure

3.2.1. *The Grit Scale (Duckworth et al., 2007)*

This scale was made to reflect how everyone sees themselves at the moment, how gritty you are at this point in life gritty can change over time. The main purpose of the scale is to discover the children's GRIT level when it comes to the combination of passion and perseverance in the learning process, as later in the case of children with a lower level, through interventions to increase them (Duckworth et al., 2007).

The GRIT scale includes 10 items, each item being evaluated on a Likert scale from 1 to 5, where 1 represents "It does not characterize me at all" and 5 - "It characterizes me very much". Considering that GRIT is a combination of passion and persistence, the latter can also be calculated separately. More precisely, to calculate the level of passion, the score from the odd items will be calculated, and the score for perseverance will be calculated from the even items.

Regarding the validity and fidelity, Duckworth et al. (2007) obtained a Cronbach's alpha coefficient of .85.

3.2.2. *The Motivated Strategies for Learning Questionnaire (MSLQ, Pintrich & de Groot, 1990)*

The purpose of the MSLQ questionnaire is to measure students' academic motivation and learning strategies. The MSLQ is divided into two scales, *the motivation scale* and *the learning strategies scale*. The motivation scale includes 31 items scored on a Likert scale from 1 to 7 where 1 represents „Not at all true of me” and 7 „Very true of me”, items that evaluate students' objectives and value beliefs for a course, their control of learning beliefs, their ability to succeed in a course and their test anxiety. The Learning Strategies scale includes 31 items on students' use of various cognitive and metacognitive strategies. In addition, the learning strategies section

includes 19 items on students' management of various resources. For the purpose of this research, only the motivation scale was applied.

Regarding validity, Pintrich et al. (1993) obtained for the motivation scale Cronbach alpha coefficients between .62 and .80, and for the learning strategies scale coefficients between .52 and .80.

Both tools were applied at the group level to be able to clarify or explain certain items that the students may not have understood in depth.

3.3. Design

The current study had an experimental design, the research was carried out over a period of six months (January-June 2022).

In the pre-test phase, the evaluation of all the participants involved in this research took place after signing an informed consent with the students' parents in order to ensure the confidentiality of the results both during the research and after its completion.

In the experimental phase, the development, implementation and running of the activities of the proposed educational intervention program took place. In the development of the activities, the learning contents (*self-knowledge and personal development* and *information and learning management*) were taken into account from the Counseling and guidance curricular area. Among the main methods of carrying out these activities we mention explanation, exercise and conversation.

Table 1. Description of the proposed activities

Crt. No.	Activity	Objectives
1.	<i>Motivation Roulette</i>	Identifying the reasons why they learn. Understanding the importance of motivation in learning.
2.	<i>Let's see how we learn!</i>	Identifying the predominant learning style. Using learning styles in different contexts.
3.	<i>Personal agenda</i>	Identifying irrational thoughts related to learning and self-efficacy. Replacing irrational thoughts with rational ones.
4.	<i>The values that represent me</i>	Evaluation of one's own value system. Awareness of the importance of values. Interpretation of values from a personal perspective.
5.	<i>Imagine your future</i>	Identifying future wishes. Creating a suggestive image of how they will look in the future.
6.	<i>Goodbye pessimism,</i>	Identifying the barriers and factors that lead them towards

	<i>welcome optimism.</i>	pessimism.
		Awareness of the medium and long-term disadvantages of pessimism.
7.	<i>I'm not/can't yet</i>	Managing pessimism by developing self-efficacy. Developing self-confidence. Motivating the transition from I can't to I can in the near future.
8.	<i>SMART goals</i>	Increasing the level of optimism. Identify SMART goals for your own learning style. Developing the perseverance.
9.	<i>"My Identity Card"</i>	Developing intrinsic goal orientation and task value. Developing the self-knowledge. Awareness of the set of skills, competencies and abilities they possess.
10.	<i>The power of gratitude</i>	Developing self-efficacy and self-esteem. Identifying important people for them and expressing gratitude towards them Awareness of the importance of passion and perseverance in achieving success. Developing resilience to successfully face obstacles and challenges.

In the post-test phase, the re-evaluation of the participants included in the research took place in order to note the existence of certain improvements at the level of the measured variables.

4. Results

Table 2. Descriptive analysis of the obtained results of the variables measured in the pre-test phase

Group	Variables	N	M	SD	Std. Error of Mean	Minimum	Maximum	% of Total Sum
<i>Control</i>	Passion		10,9	2.63	.48	7	13	19,9%
	Perseverance		23	1.57	.28	21	25	30,3%
	Grit		33,9	1.78	.32	32	36	25,9%
	Intrinsic goal orientation		24,4	4.34	.79	18	28	25,8%
	Extrinsic goal orientation		23	5.34	.97	15	27	30,8%
	Control of learning beliefs	30	21,9	4.67	.85	15	26	26,2%
	Task Value		35,6	6.51	1.19	26	41	26,6%
	Self-efficacy for learning and performance		45,9	10	1.87	31	54	26%
	Test anxiety		12,8	3.57	.65	9	17	26,3%

<i>Experimental</i>	Passion		22,2	4.23	.77	13	25	40,5%
	Perseverance		8,56	4	.74	6	23	11,3%
	Grit		30,7	1.27	.23	29	36	23,5%
	Intrinsic goal orientation	30	17,7	2.45	.44	15	28	18,7%
	Extrinsic goal orientation		12	4.6	.84	8	26	16,1%
	Control of learning beliefs		13,4	2.62	.47	11	24	16%
	Task Value		20,9	5.14	.94	15	41	15,7%
	Self-efficacy for learning and performance		32,5	4.7	.86	27	54	18,4%
	Test anxiety		15,8	.46	.08	15	17	32,6%

Analyzing the results in table 2, it is noted the existence of certain significant differences between the control group and the experimental group both at the level of the GRIT components and the academic motivation components. At the Grit level, the students of the experimental group obtained a low average in the perseverance component as well as at the general Grit level. When faced up with certain obstacles or difficulties, they either give up or become discouraged and stop completing the tasks they have started.

In addition, the students of the experimental group obtained low averages at the level of the components of academic motivation. At school, the students of the experimental group do not prefer the subjects that stimulate them, arouse their curiosity, they prefer the subjects that do not involve a high level of complexity and a lot of effort in learning. Also, they are not very interested in the knowledge they can acquire at school, they do not value the importance of effort and involvement in the learning process and do not consider that the information received at school can be useful in various contexts. Moreover, the students of the experimental group obtained a low level of control of learning beliefs and self-efficacy for learning and performance; they have a low level of confidence in their own strength, which is why they have an increased level of test anxiety.

In order to see if there are improvements in the variables measured following the implementation of the proposed educational intervention program, respectively to observe if the hypothesis of this research is confirmed, it was chosen to calculate the t-test for independent samples.

Table 3. The results of the independent t-test of the variables measured in the post-test phase

Variables	Group	N	M	SD	t	df	95% Confidence Interval of the Difference	d
<i>Passion</i>	Control	30	12,6	3.44	4,07*	58	[1.76; 5.17]	1.06
	Experimental	30	9,13	3.14				
<i>Perseverance</i>	Control	30	20,8	4.2	3,26*	58	[-4.31; -1.03]	.85
	Experimental	30	23,5	1.52				
<i>Grit</i>	Control	30	33,4	1.5	1,48	58	[-.27; 1.87]	0.3
	Experimental	30	32,6	2.25				
<i>Intrinsic goal orientation</i>	Control	30	24,6	4.4	4,23*	58	[-5; -1.03]	1.11
	Experimental	30	28	.00				
<i>Extrinsic goal orientation</i>	Control	30	23,7	5.4	7,83*	58	[5.75; 9.70]	2.05
	Experimental	30	16	.00				
<i>Control of learning beliefs</i>	Control	30	22,8	4.95	2,76*	58	[-4.48; -.72]	.72
	Experimental	30	25,4	1.40				
<i>Task Value</i>	Control	30	36,1	6.92	3,87*	58	[-7.42; -2.37]	1
	Experimental	30	41	.00				
<i>Self-efficacy for learning and performance</i>	Control	30	45,7	10.4	3,58*	58	[-10.7; -3.03]	.94
	Experimental	30	52,6	.85				
<i>Test anxiety</i>	Control	30	14,4	6.89	6,97*	58	[6.27; 11.3]	1.83
	Experimental	30	5,6	.49				

*p<.01

After calculating the t-test for independent samples, significant differences between the two groups can be noted according to table 3. Thus, the students of the experimental group obtained a $t_{(58)}=3,26$ for perseverance, a $t_{(58)}=4,23$ for intrinsic goal orientation, a $t_{(58)}=2,76$ for control of learning beliefs, a $t_{(58)}=3,87$ for task value and a $t_{(58)}=3,58$ for self-efficacy for learning and performance, which means that the students increased their level of self-efficacy, they are much more confident in their own strengths, and when they encounter certain difficulties they do not give in easily, but try to look for solutions by persevering in tasks. Also, the value level has increased, they are aware of the importance of learning and accumulating as much information as possible in the process of solving certain long-term problems.

Instead, statistically significant differences were also found at the level of test anxiety where a $t_{(58)}=6.97$ was obtained, test anxiety decreased in the experimental group due to the increased level of self-efficacy, respectively of intrinsic goals orientation.

To demonstrate the effectiveness of the proposed intervention program, the effect size was calculated. After the calculation, a d between .30 and 2.05 was obtained, which according to Cohen's criteria (1988) the proposed educational intervention program had a medium to a very strong effect. Therefore, the hypothesis of this research is confirmed.

5. Discussion and Conclusion

When we talk about motivation, it represents one of the necessities of school success, success that in the future will help students to develop and reach the desired performances. Motivation is closely related to the learning process, whether it is intrinsic or extrinsic, both having an equally important role. Purpose in relation to student motivation is found in each student's goals, future directions for them. The main factors that influence the motivation and then the school success of students are factors such as: school performance, the desire to be better, the desire to improve, social factors and finally receiving feedback. The relationship between motivation and purpose is marked by directions such as: the purpose of learning and the purpose of performing tasks that lead to student performance. Remembering also about self-assessment, this involves the use of the student's own thoughts and actions, which increase motivation towards the work task for example.

One of the non-cognitive factors that has received increased attention in recent years is grit. Grit involves working persistently and vigorously toward a challenging goal, maintaining an unwavering interest over long periods of time despite failure, obstacles, and ongoing phases of stability. Students with courage use resilience to stay on track and achieve their goals, unlike students with low courage who get easily bored or disappointed and give up or choose alternative actions. Students must first assign personal meaning to a long-term goal and demonstrate the passion to face the adversity and hardships that may arise in achieving it.

The aim of this research was to develop, implement and test the effectiveness of an educational intervention program based on GRIT activities on the development of academic motivation in fourth grade students. The results highlighted the fact that students who have a high level of GRIT have a high level of self-efficacy, control of learning beliefs, are intrinsically motivated and value the learning process more. Conclusive results were also found in several studies from the relevant literature. For example, in the study conducted by Oriol et al. (2017), they demonstrated that grittier students put in more effort and allocate more time for studying, which in turn will have a significant impact on their educational success. Also, grittier students are more likely to express a greater sense of self-efficacy. That is, their persistence in pursuing their academic goals led to increased belief in their own academic abilities—which will also increase their chances of achievement. Additionally, the results of the study by Bojovic and

Antonijevic (2017) led them to the conclusion that students can achieve their proposed goals through self-efficacy, because through it students have an increased level of self-perception vis-à-vis the competencies and abilities necessary to fulfill school tasks.

A limitation of the research is the small number of participants. With a limited number of participants, we cannot extrapolate the results obtained regarding the demonstration of the effectiveness of the proposed educational intervention program on the measured variables. Therefore, a future research direction would be to apply the proposed educational intervention program on a larger sample to demonstrate its effectiveness.

Another limitation of the research is the lack of investigation of exogenous variables such as the social support offered by parents or the parents' attitude regarding the value of learning. Starting from this limit, the second future direction of research would be to develop a mediation analysis to investigate whether GRIT represents a mediating variable between parents' attitude regarding the value of the learning process and self-regulated learning.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest.

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