Creative climate and engagement of students in school: How do they relate?

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Abstract

Research has shown that creative climate has a constructive influence on school engagement. The present study aims at understanding how creative climate relates to school engagement. A national sample of students responded to a questionnaire in class. The data collection instrument was the "Students' engagement in school: A four-dimensional Scale" SES-4DS (Veiga, 2013). This scale revealed four dimensions: cognitive, affective, behavioural and agency. Measures of Perceived Creativity Climate (5 items) suggested by the literature were included. A total of 685 students participated in the study. We observed a higher proportion of girls (56.8%) than boys (43.2%). The creative climate-related items show a consistency of alpha 0.84 and a correlation of 0.38 with the total School Engagement Scale. The dimension more correlated with the creative climate is the cognitive one, suggesting that students who see school as a place that values their ideas process knowledge in a more intentional and motivated way. The variables age and number of school retentions contribute

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negatively to the engagement of students in the school. Some suggestions for the promotion of creative climate are presented in order to encourage the engagement of students in the school.

Keywords: creative climate, cognitive engagement, flexibility.

1. Conceptual framework

Educational research shows that the multidimensional construction that occurs in school environment through the mutual interaction between human relationships, physical context and psychological atmosphere determines the level of learning and well-being of students (e.g. Perkins, 2006; Van Houtte, 2005). This environment is called school climate and includes dimensions that are not directly observed such as expectations, communication, collaboration, security, respect, the quantity and quality of interactions between adults and students and, inevitably, school engagement (Kuperminc, Leadbeater, & Blatt, 2001). All these dimensions influence positively academic performance, students' behavior and the reduction of school drop-out (e.g. Loukas & Murphy, 2007). The new social and economic challenges need a supportive and defiant school environment as a precondition to engage all students, allowing them to enrich their development (e.g. Sternberg, 2012). Engagement is assumed as an investment in school learning based on the effort to understand the subjects taught in school, internalize and incorporate them into everyday life (Newmann, 1989) and is intrinsically associated with the creative climate of the school.

1.1 School engagement

Engagement in school was defined by Veiga (2012) as the experience of centripetal attraction of the student towards school. According to the author engagement is expressed in cognitive, affective, behavioural and agency terms (Veiga, 2012). The cognitive dimension refers to all elements of information processing provided by the school, and the relationships between them. The sense of integration and belonging to school describes the affective dimension of engagement while classroom behaviour, attention and absenteeism are elements of the behavioural dimension. The agency

dimension refers to the student as an agent of action, with initiative and ability to intervene.

Fredricks, Blumenfeld and Paris (2004) consider school engagement, and in particular cognitive engagement, as an antidote to academic and motivational signs of school alienation. Cognitive engagement includes the cognitive processes that allow the processing, using, manipulating and managing information both in sensorial and perceptive terms (Garner, 2008). Cognitive engagement allows for concentration of attention and activation of the predisposition for interaction with learning. It also includes the conceptualization of information with existing knowledge. This process enables questioning, curiosity, explanation, interpretation, assigning meaning, construction, implementation and the enrichment of knowledge (e.g. Garner, 2008; Guthrie, 2004). Connell and Wellborn (1991) assert that cognitive involvement includes flexibility in solving problems. For Appleton, Christenson and Furlong (2008), autonomy, along with support from teachers, is an important indicator of cognitive engagement. All these features - questioning, curiosity, flexibility, and autonomy - are dimensions of creativity.

According to Dahlberg (2007), engagement not only refers to the participation in an activity but also the emotional link that enables meaning and fruition. Emotional interactions in the context of the classroom promote academic performance and engagement in school (Reyes, Brackett, Rivers, White & Salovey, 2012). Flexibility in problem solving, willpower and the support given to students' autonomy are relevant motivational and inevitably emotional variables in school engagement (e.g. Appleton et al., 2008). For Newmann (1989), practical knowledge, collaboration and recognition of diversified talents increase students' engagement in the school. Students' motivation and performance rise when teaching supports autonomy (Appleton et al., 2008). In spite of these results, Fredricks et al. (2004) accuse the system of not providing frequent opportunities for cognitive engagement, in particular, because there is no space for a more flexible use of knowledge.

Thus, school engagement is related to creativity. Research has stressed the relation between creativity and engagement. Seidel, Tishman, Winner, Hetland and Palmer (2009) emphasise that creative tasks in school context generate a global engagement and the exploration of ideas. Moreover, Loughrey and Woods (2010) clarify that the opportunities of handling creative learning materials increases engagement of students, teachers and parents at school.

1.2 Creative Climate

Creativity is a crucial variable both for personal well-being and social equity (Grantham, 2013). An increasingly broadened body of research has been showing in recent years that creativity facilitates personal and group transformation in various contexts (e.g. Rank, Pace, & Mills, 2004) and leads to the production of something new and valid both for the person and for others (Pope, 2005).

Creative engagement is an important developmental support that determines school connectedness (Whitlock, 2006). It refers to the extent to which pupils feel their school offers meaningful opportunities to be creatively involved in activities of interest and to develop their self-expression. According to Larson (2000) involvement in structured activities and participation in extracurricular activities are the most stimulating opportunities to promote agency because they are engaged in a creative process with significant outcomes for participants and larger society. This involvement also influences school connectedness. Creativity is, thus, strongly associated to motivation. Forgeard and Mecklenburg (2013) suggest a reciprocal model of the creative process in which motivational orientations are translated into specific motivational goals, which lead to creativity. In this model, motivation guides creative cognition. Motivational goals correspond to ways in which creative people wish to affect themselves or others, and are, therefore, pro-social. This social aspect of creativity includes persistence, vigour, psychological distancing, and perspective-taking that, in turn, influence creative ideas and products which may affect others (Forgeard & Mecklenburg, 2013).

Consequently, research shows that creativity also promotes social and emotional wellbeing (Plucker, Beghetto, & Dow 2004). However, research also has revealed that creativity of students in schools has been declining in at least three dimensions: innovation, adaptation and creative forces. This decline is explained in terms of an excessive rigidity on the part of schools that exaggerate the structuring and evaluation to the detriment of flexibility and also a unbalanced use of technologies that inhibits the possibility of active manipulation (e.g. Kim, 2010). Torrance (2002) considers that the biggest deficit in education is the lack of opportunities in the environment to promote creative thinking, namely, the climate of creativity of the school that enables its expression. In this sense, creative climate refers to the field of dimensions and variables that flow and interact to develop creativity (e.g. Hunter, Bedell, & Mumford, 2007)

Research on the creative climate at school has revealed some decisive factors that enhance engagement: challenge, freedom, presence of conflicts or dilemmas to solve, support for ideas, exchange and sharing of knowledge, mutual confidence, dynamism, openness, time to learn, time to play and risk-taking (e.g. Ekvall, 1999; Isaksen, Lauer, & Wilson, 2003). Nickerson (1999), in turn, believes that creativity arises from the establishment of goals, building skills, acquisition of specific knowledge in a given domain, stimulus and reward of curiosity and manipulation, intrinsic motivation, encouragement of confidence and autonomy. According to James, Lederman and Vagt-Traore (2004) encouraging and strengthening unique and different approaches and questioning the students' assumptions, considering different beliefs, stimulating dissension and diversity provide means to develop originality and innovation, two important dimensions of creativity.

In reality, deepening knowledge and understanding how students see the world, as well appreciating students' creative expressions, believing in the creative abilities of all students and attending to the diverse needs of all students are variables that promote creativity and the subsequent involvement in school (Fryer, 1996). In the same manner, teachers' support and empathy encouragement provides students with models of motivation and persistence in creative thinking and involves them in school (e.g. Ekvall, 1999, Fryer, 1996). Creativity is a crucial dimension of learning, motivation and school engagement. Hattie's (2009) literature review on the effectiveness of various teaching methodologies and strategies found that creativity development programs have a very significant impact on success in learning and the growth of effective changes in some of its participants. This data is more relevant in the case of programs which have clear instructions and opportunities of direct manipulation of objects or ideas. There is a consensus among researchers that creativity should be encouraged, developed and evaluated throughout the educational process (Wechsler, 2009). Hunter and colleagues' (2007) meta-analysis showed that support and autonomy are the dimensions of creative climate that more have impact on creative performance at school and in adult life in competitive environments.

A school climate that promotes creativity comprises, according to the meta-analysis of Fleith and Alencar (2005), five factors: (1) support for the expression of ideas; (2) students' perception about their creativity; (3) interest for knowledge; (4) autonomy, and (5) stimulation of idea production. Support for the expression of ideas of the students refers to the attention given to the ideas developed in classroom context. Students' perception of their creativity refers to the representation that they have

of their creative processes and products whereas students' interest for knowledge and for learning implies awareness that they learn useful things that they really like. Autonomy of students is revealed in the different alternatives through which they accomplish academic task. Fostering students' idea production refers to the encouragement given by the teachers to their thoughts and use of new information.

Notwithstanding the importance of creativity in education, research has shown the factors that promote creativity are not often present in the classroom context (e.g. Kim, 2010). Schools still insist on looking for the ideal student as one who conforms (e.g. Sternberg, 2012) and encourages students to solve problems correctly but not creatively (Kraft, 2005). The excessive emphasis on evaluation and quantification of learning has reduced in importance the relational aspect of education (Anjuvashistha, 2010). Everyday classroom processes require and reward logical thinking and effectiveness and do not promote skills that critical for adaptation to the near future such as innovation, digital literacy and personal management (Trilling & Fadel, 2009).

In sum, creative engagement constitutes a relevant dimension of connectedness. Margolis and McCabe (2006) describe it as the discovery of significant associations through the manipulation, experimentation, interests and choices of the student. This type of engagement is reflected in a school culture that supports and sustains students' achievement, demonstrates the value and satisfaction in learning and promotes the adoption of autonomous, self-directed and student-centred learning (Black, 2003).

2. Objetive

Assuming that research based on the creative climate constitutes a relevant feature of involvement of students in school, the present work aims to understand how creative climate relates to the engagement of students in the school.

3. Method

This study is part of a wider research project, titled Students Engagement in school: differentiation and promotion, coordinated by Prof. Feliciano H. Veiga and funded by FCT. It is part of the application of a four-dimensional scale built to evaluate the engagement of students in school - SES-4DS "Students' engagement in school: A four-dimensional Scale" (Veiga, 2013). Five of the items of the scale refer to the creative climate.

3.1 Sample

The sample comprises 685 students, 389 girls e 296 boys that attend the 2º and 3º cycles of studies and secondary education in various regions of Portugal. The younger ones, 138 attend 6th grade, 170 the 7th, 197 the 9th and 180 the 10th grade. Participants' ages range from 11 to 19 with a mean of 13.8. The sample includes 56,8 % of girls and 43,2% of boys.

3.2 Instrument

The data was gathered in the context of the classroom through the questionnaire "Students' Engagement in School: A Four-Dimensional Scale: A four-dimensional Scale" (SES-4DS), a multidimensional instrument, with strong reliability and validity, with a internal consistency of 0.83 (Veiga, 2013; (Veiga, 2013; Veiga, Bahia, Nogueira, Melo, Caldeira, Festas, Taveira, Janeiro, Conboy, Carvalho, Galvão, Almeida, & Pereira, 2012). The instrument revealed four dimensions: cognitive, affective, behavioural and agency.

The construction of the five items relating to climate of creativity was based on research on engagement and creativity, namely pertaining to support from teachers (Appleton et al., 2008); flexibility in solving problems as motivating engagement (Connell & Wellborn, 1991); questioning, curiosity and attribution of meaning (Garner, 2008), discovery of significant associations from the manipulation, experimentation, interests and choices of the student (Margolis & McCabe, 2006); practical knowledge and examples (Guthrie, 2004) and autonomy, all of which are determinant for

school engagement (Appleton et al., 2008). In this logic, the items sought to assess the perception that students have of teachers and school as stimulators of ideas, questioning, original activities, as well as their participation in school.

The systematization of these dimensions adopted in this study was the one from Fleith and Alencar's (2005) scale that has proven to be adequate for the Portuguese population (e.g. Fleith, Almeida, & Peixoto, 2011). The factors of the original scale include (1) support for the expression of ideas; (2) students' perception of creativity; (3) interest in knowledge; (4) autonomy and (5) stimulation the production of ideas. The five items represented each of these dimensions. The questions that represented each of these dimensions were adapted from the original scale and were chosen because they were not contemplated in the other items of the questionnaire and had a good consistency in terms of Fleith and Alencar's (2005) original scale. The items were adapted in terms of grammatical structure and formal style to the rest of the questionnaire. Thus, the five items that constituted the instrument of study the climate of creativity were:

(1) In my school, teachers encourage students to ask questions (stimulating the production of ideas);

(2) My teachers encourage students to express their own ideas (supporting the expression of ideas);

(3) My school develops many creative activities outside the classroom (interest in knowledge);

(4) In my school, teachers illustrate the subject with a lot of examples (students' perception of creativity);

(5) My teachers encourage pupils' participation (autonomy).

4. Results

The items that were used in the general scale of students' engagement to measure specifically Creative Climate reveal a high internal consistency: Alfa 0,84 as shown in Table 1.

Table 1. Proportion of discordance / concordance in the Creative Climate Items

ITEMS CLCR	D	C
In my school, teachers encourage students to ask questions.	13,4	86,6
My teachers encourage students to express their own ideas.	12,0	88,0
My school has developed many creative activities outside the classroom.	30,2	69,8
In my school, teachers illustrate the class topics with good examples.	16,4	83,6
My teachers encourage classroom participation.	10,5	89,5

The study of the correlations between the four engagement dimensions (cognitive, affective, behavioural and agency) and the Creative Climate items shows that the correlations are positive and significant. The cognitive dimension is the most highly correlated to the perception of Creative climate (Table 2).

Table 2. Correlations between Engagement and Creative Climate Items

SES / Items CLCR	1	2	3	4	5	Total
Cognitive	,216**	,217**	,262**	,284**	,228**	,311**
Affective	,142**	,193**	,182**	,192**	,218**	,237**
Behavioral	,110**	,147**	,124**	,206**	,221**	,204**
Agentic	,200**	,178**	,197**	,182**	,170**	,239**
Total	,265**	,284**	,300**	,328**	,314**	,382**

** Correlation is significant at the 0.01 level (2-tailed).

Table 3 presents the descriptive statistics of the items of the Scale of Engagement and the items of the Creative Climate according to grade.

Table 3. Means and standard deviation in engagement (SES), grade and Creative Climate (CC)

SES			Cognitive		Affective		Behavioral		Agency		Total	
Grade	CC	N	M	SD	M	SD	M	SD	M	SD	M	SD
6º e 7º	law	123	17.7	0.4	24.1	0.4	26.2	0.3	17.8	0,5	85,8	1,0
	high	185	21,4	0,3	26,0	0,3	27,7	0,2	20,4	0,4	95,5	0,8
9º e 10º	law	215	17,1	0,3	23,8	0,3	26,3	0,2	17,2	0,4	84,3	0,8
	high	162	18,4	0,4	25,2	0,4	27,1	0,3	19,3	0,4	90,0	0,9

The analysis of variance in the dimensions of engagement measured by the SES scale in function of the grade and the Creative Climate shows that pupils with a higher perception of the school's creative climate and a lower school engagement reveal a higher devaluation of the school (Table 4). Pupils who value less school are those with lower values in School Engagement and Creative Climate.

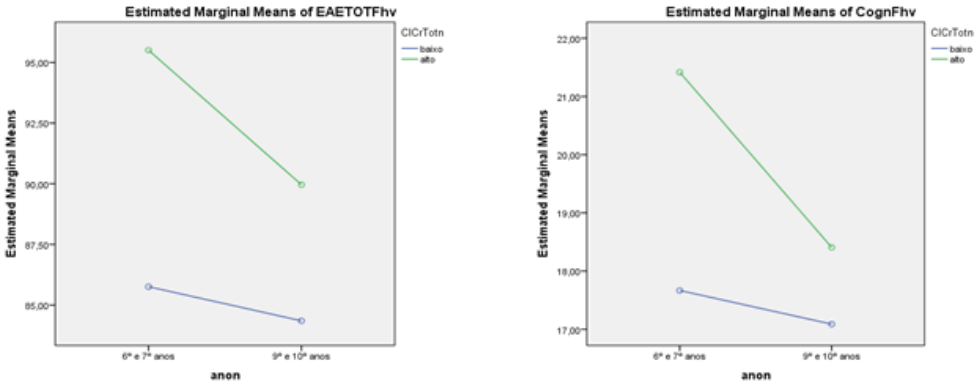
Table 4. Analysis of variance – SES in terms of grade and Creative Climate (CC)

		Cognitive			Affective			Behavioral			Agency			Total		
	GL	QM	F	S	QM	F	S	QM	F	S	QM	F	S	QM	F	S
Grade	1	528,2	24,8	***	46,8	2,2	ns	14,7	1,4	ns	118,5	3,7	*	1984,3	15,1	***
CC	1	1054,6	49,4	***	452,6	21,3	***	230,4	21,2	***	871,7	27,4	***	9693,1	73,6	***
CC* Grade	1	242,5	11,4	***	9,4	0,4	ns	20,7	1,9	ns	11,0	0,3	ns	702,9	5,3	*

* p < .05 ** p < .01 *** p < .001

The effect of interaction between low and high creative climate variables and grade level occurs in the cognitive dimension and total engagement. In the cognitive dimension (Figures 1 and 2), the interaction was due to the decreased engagement between the lower grades and the higher grades. Students show a high creative climate in 6th and 7th grades which decreases in the 9th and 10th grades. This decrease is notorious in the group of students with high in creativity climate (t = 5,83; GI = 345; p<0.001). The group with lower creative climate remains stable from the lower grades to the higher grades. In Total Engagement, the variation was similar according to the group: there was a decrease in the higher creative climate (t = 4,33; GI = 345; p<0.001) and stability in the lower creative climate (ns). The variables age and number of retentions contribute negatively to the Engagement of students in the School.

Figures 1 and 2 — Effect of interaction between low and high creative climate variables and grade level



5. Conclusions

The main conclusion of the study is that engagement and creative climate are related. The five items included in the students' engagement scale concerning creative climate show a high correlation with the total Scale, which reveals a strong association between the perception of the climate of creativity of the school and engagement. Younger students who perceive a high creative climate also show high levels of engagement. However, older students who perceive the creative climate as high decrease their engagement whereas pupils who perceive creative climate as low remain less engaged. The data show the existence of an association between the questioning, curiosity and practical application of knowledge and engagement in learning, such as Neumann (1989) advocated.

The dimensions of the engagement that are more correlated with creative climate are those of total engagement and cognitive engagement, suggesting that students who consider school as a place that values their ideas process knowledge in an intentional and motivated way. Exploring and relating information (Guthrie, 2004), flexibility in solving problems (Connell & Wellborn, 1991) and autonomy (Appleton et al., 2008) seem to be intimately associated with the emotional connection to knowledge through which meaning is assigned to learning and its fruition (Dahlberg, 2007). This association is stronger the younger the students are.

Older students and students with a higher perception of creative climate undervalue school, suggesting that school engages the younger students. This fact

is corroborated by the perception of students that do not consider creative climate than indicates that teachers seem to support more the expression and production of ideas of younger and more creative students, as Fleith and Alencar alert (2005). The data also suggests the idea that younger students, those who have retentions and those who feel the school as having a low creative climate are those who feel less autonomy and do not perceive themselves as creative. Indeed, factors such as enjoying learning, accountability and encouragement are vital to the promotion of involvement in school (Kobus, Maxwell & Provo, 2008).

The results of this study point to the strong relationship between creativity and involvement in the school. Despite the recognition that creativity is crucial to the success and quality of learning, many authors stress that not enough efforts for its promotion in school context have been undertaken (e.g. Morais & Azevedo, 2011). However, research has revealed positive effects of increased investment in the promotion of climate conducive to the development of creativity in school context (e.g. Hattie, 2009). Greater openness of the school to promote challenge, freedom, support of ideas, exchange and knowledge sharing, mutual confidence, dynamism, openness, time to learn, play, humour, risk-taking (Isakson et al., 2003) constitute fundamental foundations to make students more creative and more connected school.

Creative engagement seems to constitute a relevant dimension of engagement. Promoting a creative climate that enables the discovery of significant associations through the manipulation, experimentation, interests and choices of students at school is, as Margolis and McCabe (2006) state, an important asset for school involvement. This type of engagement is reflected in a school culture that supports and sustains the learner, demonstrates the value and satisfaction of learning and promotes the adoption of an autonomous and self-directed learning (Black, 2003). Creativity is an important vehicle for engagement by allowing students to invest in learning through the effort to understand the knowledge, internalize it and embed it in everyday life. Ultimately, everyday creativity leads to creative undertakings because it combines personal characteristics, intrinsic motivation and values, with the demands of the surrounding community (Bramwell, Reilly, Lilly, Kronish, & Chennabath, 2011).

In face of the social and economic changes and challenges it seems that a supportive and defiant school environment as a precondition to engage all students allowing them to enrich their development is urgent (e.g. Sternberg, 2012). The development of a creative school climate promotes connectedness and investment

in school learning that enables a deep understanding of the world and its integration into everyday life (Newmann, 1989).

Note:

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