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Constructivist learning, teacher interaction, and self-efficacy as predictors of boredom in elementary school students in Croatia

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Abstract

The aim of the study was to examine the characteristics and predictive roles of constructivist learning, teacher interaction, and self-efficacy in relation to student boredom in classes of seventh- and eighth-grade elementary school students (ISCED level 2: lower secondary education) in the Republic of Croatia (N = 1249). The results showed that constructivist learning, teacher interaction, and self-efficacy are significant predictors of classroom boredom. It was shown that classroom boredom is lower when students have higher intrinsic motivation to learn, i.e., when they are interested in what they are learning and believe it is applicable in real life. The results indicate that too much freedom, a lack of clear boundaries, and excessive student independence without teacher guidance can lead to a greater long-term feeling of boredom in the classroom. It has been shown that a higher sense of self-efficacy results in lower boredom, and hierarchical analysis showed that higher social self-efficacy still results in greater boredom, which indicates that students with developed positive relationships with peers and those who fight for their rights, while not violating the rights of others, may experience a greater sense of boredom in class in the long run.

Keywords: *constructivist learning; elementary school; self-efficacy; student boredom; teacher interaction*

Introduction

Research on emotions in the school environment has shown that the dominant emotions are fear and boredom, as well as other unpleasant emotions (Bognar &

Dubovicki, 2012). According to Pekrun's control-value theory of achievement emotions, boredom is a negative, deactivating emotion that negatively affects learning and achievement (Pekrun, 2006). According to research, boredom is experienced more often than anxiety at school (Trogrlić & Sorić, 2014), and as many as 44 % of students experience boredom in class (Daschmann et al., 2011).

Boredom depends on external stimuli; in the school environment, it is related to how the teacher teaches. Previous research on boredom in class has linked it to lower academic achievement, absenteeism, dropping out of activities and school, and adolescent delinquency. It has been shown that the level of boredom is positively correlated with the perceived difficulty of classes (Trogrlić, 2012). It is to be expected that boredom will be lower when the teaching process is stimulating, and students actively participate, i.e., students who believe in personal efficacy will experience boredom in class less often.

Given the modern changes in the educational system in which the emphasis is on modern and stimulating ways of working and on student activity, modern teaching should reduce the feeling of boredom in class, and precisely the motivation and encouragement of students to be active is one of the greatest challenges for teachers, along with the creation of a stimulating and positive classroom atmosphere.

The increasing interest in the classroom atmosphere is emerging alongside the development of constructivist teaching. The teaching atmosphere is generally defined as the quality of relationships among participants in the teaching process, and teacher interaction is a key predictor of the realisation of quality teaching. Some research shows that teacher authoritarianism can reduce students' sense of autonomy and intrinsic motivation, and a need has emerged for research examining the characteristics and roles of constructivist learning, teacher interaction, and self-efficacy as predictors of student boredom in class, using student boredom in class as the criterion.

Classroom boredom

Research on boredom as an emotional state described as aversive intensified in the 1980s. In the pursuit of a more comprehensive model, boredom is associated with monotony, a state yielding high levels of frustration and unease, and is further characterised by diminished interest and concentration (Perkins & Hill, 1985). Its negative association with academic achievement in higher education was noted (Moroldo, 1986), and research began in the school setting, where it was defined as an intense, brief psychological and physiological change that occurs in response to a supposedly meaningless educational stimulus (Pekrun et al., 2002; Sharp et al., 2016). Boredom is characterised by dissatisfaction and low levels of arousal, prompting daydreaming, a perceived slowing of time, and an inclination to leave the situation (Goetz et al., 2014, as cited in Wang et al., 2020). Physical changes experienced during boredom include drowsiness, yawning, slouching, and cold hands (Pekrun et al., 2014, as cited in Wang et al., 2020). Theories of boredom have changed over time, but they share the common characteristic of encompassing an individual's simultaneous desire and inability to engage in stimulating and satisfying activities (Fahlman et al., 2013).

The concept of boredom is multi-layered, relational, situational, and ambiguous, meaning it is created within a relationship, manifests in certain situations, and depends on subjective desires, interests, and expectations (Elpidourou, 2015, as cited in Ušić, 2017). As a result, there are several types of boredom. Goetz and Frenzel (2006) propose a model of four types of boredom based on the degree of valence and arousal: indifferent, calibrating, exploratory, and reactant. According to recent research, a fifth type, apathetic boredom, is also proposed (Goetz et al., 2013). The rarest form of boredom is indifferent boredom, which is described as relaxing. In a study involving high school students (N = 1,432), 11 % of participants reported this type of boredom, characterised by so-called "cheerful fatigue". Calibrating boredom is characterised by "mind wandering", and students who experience this type of boredom want to change the situation they are in. Unpleasant restlessness and an active search for a way out of the current situation are characteristic of exploratory boredom. When experiencing reactant boredom, a person is strongly motivated to escape from the situation and avoid those responsible for it (the teacher, the subject, the work materials). Apathetic boredom is characterised by low arousal and feelings of helplessness or depression, and in the study by the above-mentioned authors, as many as 36 % of high school students experienced it. The authors state that reactant boredom is most commonly associated with classes and education in general, whereas indifferent boredom is most commonly associated with free time (Goetz et al., 2013).

Research on predictors of boredom among students has shown that it is associated with personal and situational factors, as well as the dynamics of their interactions. Students who lack interest in a school subject become bored when the teaching dynamics are low (Kögler & Göllner, 2018). Previous research on boredom has further shown that boredom in class most often occurs when teachers independently select activities without the opportunity for students to make their suggestions (Larson & Richards, 1991), and students cite characteristics of the class as the most common precursor to boredom (Lohrmann, 2008, according to Nett et al., 2016). High levels of boredom are highly positively correlated with high student abilities (Larson & Richards, 1991). The results indicate that the teaching style is of great importance for the teaching process, i.e., for the occurrence of boredom in class (Nett et al., 2016).

In modern teaching, new strategies are being developed that fall under the domains of constructivist didactics and neurodidactics. Boredom is a complex human emotion and needs to be viewed in the broader context of learning, interaction between the main participants in the lesson, and self-efficacy.

Constructivist teaching and learning

Constructivism is defined as the construction of cognition and knowledge through social or individual interaction with the social and/or physical environment, based on one's prior knowledge, experiences, motivation, and emotions (Topolovčan, 2023). Constructivism is considered a philosophical (epistemological) theory of the nature of knowledge, a psychological theory of human learning, and a didactic theory of teaching

and education. There are several theoretical approaches to constructivist learning and teaching. In this regard, while personal and cognitive approaches are considered *inter alia*, the approach can be fundamentally categorised into radical constructivism and social constructivism. Radical constructivism is defined as the independent, self-regulated construction of knowledge through interaction with and manipulation of the physical environment, with von Glasersfeld and Piaget as its leading proponents. Social constructivism is defined as the individual construction of knowledge through both physical interaction and communication with others within a social context, a perspective primarily associated with Vygotsky (Topolovčan, 2023).

Research systematically shows that inquiry-based teaching, which is not sufficiently represented in the educational process, provides significant educational benefits to students in learning and academic achievement, develops critical thinking and problem-solving skills, and improves motivation for learning (Alagić, 2021; Letina, 2016; Princ & Felder, 2007; Septi Andrini, 2016). Although problem-based teaching integrates various active learning methods and multimedia, and enables more intensive learning and greater motivation, teachers find it difficult to organise (Pecko, 2015). Project-based teaching is characterised by the development of communication, research, organisational, and critical skills (Fabijanić, 2014). Research shows that even in such a teaching arrangement, students do not want to be passive, but active stakeholders (Zugaj, 2014). Furthermore, learning through play as a constructivist approach strengthens students' observation, presentation, and reasoning (Čelič, 2007), and teachers are expected to encourage students' motivation to learn through play (Grm, 2021). Playing video games, which are rarely integrated into teaching (Kirriemuir & McFarlane, 2004), develops the ability to plan, communicate, negotiate, and think (Nikčević-Milković et al., 2011). Integrated teaching contributes to reflection and the ability to cooperate and implement ideas into practice (Buljubašić-Kuzmanović, 2007). Collaborative teaching develops students' responsibility and self-confidence, reduces anxiety related to learning, increases motivation (Peko et al., 2006), and encourages creativity and positive social relationships (Bognar, 2006). In the study by Nikčević-Milković (2004), students positively evaluate active forms of constructivist teaching and its benefits, such as problem-solving, cooperation, critical thinking, and creativity. Constructivist teaching encourages the development of intrinsic motivation, as well as participation in class and interactive communication (Džinkić & Milutinović, 2018). In addition to numerous educational benefits, constructivist teaching also contains certain disadvantages, such as the relativisation of the teacher's role and objective knowledge, the possibility of optimal evaluation, and the neglect of social, ethical and moral issues (Topolovčan, 2023).

Teacher interaction

The quality of the teaching environment is of utmost importance for the learning and teaching process, while the classroom atmosphere greatly influences learning outcomes (Astutik, 2018) and is an important factor in a child's emotional, cognitive

and social development (Domović, 2004). The structure of the classroom atmosphere is determined by the events students perceive in the classroom, and important factors include test anxiety, class cohesiveness, student workload, teacher support (Jurčić, 2006), student motivation for work, and expectations of success (Kyriacou, 2001). Optimal challenges and rich sources of stimulation within the classroom atmosphere can positively influence students' intrinsic (internal) motivation, resulting in greater satisfaction and higher academic success (Koludrović & Reić Ercegovac, 2014). The teacher creates the classroom climate by fostering a social atmosphere that can range from completely free and democratic to aggressive and apathetic (Bognar & Matijević, 2005). In the last twenty years, the interaction between teachers and students within the classroom context has been researched, and at the centre of this research have been teaching, support for student autonomy, classroom management, or socio-emotional relationships, which are attempted to be linked to student academic achievement (Šimić Šašić & Sorić, 2011). According to Šimić Šašić (2011), the model of teachers' interpersonal behaviour is based on the Leary model (as cited in Wubbels et al., 1985). This model delineates eight types of teacher behaviour: leadership, helpfulness/friendliness, understanding, giving freedom to students, teacher uncertainty, dissatisfaction, admonishing, and strictness (as cited in Brekelmans et al., 1993), as well as eight types of teacher-student interpersonal relationships: directive, tolerant, authoritative, tolerant and authoritative, uncertain-tolerant, uncertain-aggressive, repressive, and drudging.

According to Drobot and Ross (2012), the teacher's teaching style, instructional delivery, and classroom management affect student behaviour. Furthermore, the way the teacher organises relationships with students is important for the emotional and social climate, as well as for the acquisition of subject content. Teacher-student interaction can be positive (teachers provide high support and high challenge and use active teaching strategies) and negative (teachers provide both low support and low challenge). Negative interactions occur when teachers use an authoritarian leadership style and have a negative attitude towards teaching and high expectations of students (Šimić Šašić, 2011). Higher academic achievement among students is associated with classes taught by directive and tolerant teachers, and lower achievement with classes taught by mostly insecure-aggressive and insecure-tolerant teachers (Rickards et al., 2003, as cited in Šimić Šašić, 2011). In general, teacher-student interaction and the teacher's work style are of exceptional importance for the quality of work in a modern school, as shown by the aforementioned research. The quality of classroom interaction in these studies is linked to learning outcomes (Huitt, 2003), academic success (Klarin et al., 2003, as cited in Opić, 2016), the development of student creativity (Juul & Jensen, 2010, as cited in Opić, 2016), and student temperament and self-esteem (Šimić Šašić et al., 2021). However, teachers and students assess the quality of their interpersonal relationships differently. Students' assessments are lower, and teachers' assessments are higher, but it is clear that teacher-student interaction leaves a lasting mark on student development (Opić, 2016).

Student self-efficacy

Student (academic) self-efficacy is a construct that denotes an individual's beliefs about their own achievements in certain academic tasks, and is defined as individual self-efficacy developed in an academic environment (Bong & Skaalvik, 2003). This construct develops from childhood and is not a hereditary trait (Maddux, 2002), but is based on one's own and indirect experience, verbal persuasion and psychophysical state (Milanović Dobrota & Radić Šestić, 2012).

At the core of the self-efficacy theory is the expectation of personal efficacy in situations that require initiating specific courses of action. According to Bandura's social-cognitive theory, the beliefs that people hold about themselves are a key element in exercising control and personal action. A person who successfully completes a given task will develop greater confidence in their abilities and be more motivated to work. If a person experiences failure, then their self-efficacy will also be reduced (Bandura, 1977, 1989).

At the end of the twentieth century, self-efficacy was increasingly investigated in academic settings and has most often been associated with constructs of motivation and self-regulation of learning (Ivanov & Penezić, 2001). Research shows that self-efficacy is an important factor in explaining and predicting academic performance, is associated with career choice, and is a predictor of success and persistence in academic settings (Multon et al., 1991). Individuals with a higher sense of self-efficacy persist longer and use more adaptive learning strategies in their own task performance (Pintrich & Garcia, 1991). Self-efficacy is associated with critical thinking, metacognition, repetition of what has been learned, organisation, elaboration, seeking help, and peer learning (Nielsen, 2004), and is also a positive predictor of student initiative (Luketić, 2016). Students with high levels of self-efficacy are adaptively involved in self-regulated learning and use learning strategies that support deep learning (Prat-Sala & Redford, 2010). Knowledge goal orientation and performance goal orientation as motivational strategies for self-regulation of learning are associated with self-efficacy (Rupčić & Kolić-Vehovec, 2004). According to some research, self-efficacy also depends on a student's age. For example, Koludrović and Radnić (2013) show that younger students report higher self-efficacy and greater satisfaction with the classroom climate than their older counterparts.

Methodology

The aim of this research was to examine the characteristics and predictive roles of constructivist learning, teacher-student interaction, and perceived self-efficacy in relation to student boredom in class, using student boredom as the criterion.

Participants

The territorial cluster sample of the study included students in the seventh and eighth grades of elementary school (ISCED level 2, final grades of lower secondary

education) from all five regions of the Republic of Croatia (N = 1249). The study was conducted from October to November 2021 (Rudić, 2022). Participants completed a paper-and-pencil questionnaire. Prior to the commencement of the study, informed consent was obtained from the pupils' parents or guardians, institutional agreements were secured from the schools, and ethical clearance was obtained from the competent ethics committee. Completing the questionnaire was anonymous and voluntary, and participants could withdraw at any time. The research sample comprised 554 boys (44.4 %) and 693 girls (55.5 %); of these, 603 (48.3 %) were in the seventh grade, and 646 (51.7 %) were in eighth grade. Of the total sample, 431 (34.5 %) participants lived in rural areas, while 818 (65.5 %) resided in urban areas.

Instruments

Data were collected using a survey questionnaire comprising questions on participants' demographic characteristics (grade, gender, overall academic achievement, and place of residence), along with established scales, with the formal consent of the respective authors. Data on student self-efficacy were collected using the *Self-Efficacy Questionnaire for Children* (SEQ-C; Muris, 2001). Data on constructivist learning were assessed using the *Constructivist Learning Environment Survey* (CLES; Taylor et al., 1997), while classroom boredom was measured using the *Classroom Boredom Scale* (SDN; Trogrlić & Sorić, 2014). Finally, teacher-student interaction was evaluated through the Questionnaire on Teacher Interaction (QTI; Wubbels et al., 1993), using the Croatian adaptation by Vulić-Prtorić and Sorić (2007).

Classroom Boredom Scale

The one-dimensional instrument, the Classroom Boredom Scale (Trogrlić & Sorić, 2014), consists of 26 manifest statements on a five-point Likert scale (from 1 – I strongly disagree to 5 – I strongly agree). The scale measures students' self-assessments of boredom throughout the class. By adding up the values of all statements, a theoretical total value on the scale is obtained (from 26 to 130), so that a higher score indicates greater boredom. The scale has already been validated with a sample of Croatian participants, demonstrating satisfactory metric properties (Trogrlić & Sorić, 2014).

An exploratory factor analysis (KMO = .965; Bartlett's test of sphericity was significant, χ^2 = 14440.24; df = 325, p < .01) using item loadings greater than .30 and eigenvalues greater than 1 extracted four factors explaining 54.57 % of the total variance. Since most items loaded onto a single factor, a confirmatory factor analysis (CFA) constrained to a single factor was performed, explaining 40.93 % of the variance and thereby confirming the unidimensional structure of the scale (Table 1). The internal reliability of the scale was satisfactory (α = 0.93).

Constructivist Learning Environment Survey

The Constructivist Learning Environment Survey (CLES) (Taylor et al., 1997) contains 35 statements on a five-point Likert scale (from 1 – never to 5 – almost always) arranged

in five factors. The instrument was previously validated with Croatian participants (Bošnjak, 2009). For this research, individual items were slightly modified to align with the study's research questions. The factor Personal Relevance focuses on intrinsic motivation for learning and the interest and usefulness of what they are learning in life situations. Critical Voice refers to students' critical attitudes towards what they are learning, the selection of information, and what they have learned. The factor Shared Control focuses on assessing control over their own learning process and participation in teaching activities. In Student Negotiation, students assess collaborative teaching relationships and collaborative learning, while in the factor Learning Uncertainty, they assess the possibilities of experiencing scientific knowledge in learning (Table 1).

Six statements were reverse-scored, and scores for each factor were obtained by summing the item values, with higher scores indicating a greater level of constructivist learning. An exploratory factor analysis (EFA) was conducted using a common factor model and Varimax rotation (*KMO* = .83; Bartlett's test of sphericity was significant $\chi^2 = 10765.15$; $df = 595$; $p < 0.001$). With a loading factor greater than .30 and the Kaiser criterion (eigenvalues > 1), seven latent factors were extracted, accounting for 36.69 % of the variance. One factor comprised two items with low loadings, while another contained three items that cross-loaded onto some of the remaining five factors. Six items were excluded from further analysis due to inadequate loadings.

A five-factor confirmatory factor analysis (CFA) comprising 29 items accounted for 37.104 % of the variance. After this analysis, two items were excluded from further analysis due to unsatisfactory loadings. The factor structure of the 27-item scale explained 38.90 % of the variance, although the final structure contained 26 items due to low internal reliability for one factor. The factors showed satisfactory internal consistency (Personal Relevance $\alpha = .79$, Critical Voice $\alpha = .68$, Shared Control $\alpha = .62$, Student Negotiation $\alpha = .80$). The Learning Uncertainty factor showed a lower reliability ($\alpha = .56$); however, further inspection indicated that removing a single item yielded an improved factor reliability ($\alpha = .72$). Therefore, this item was excluded from subsequent analyses, and a repeated FA showed that the final 26 items explained 39.57 % of the total variance.

Questionnaire on Teacher Interaction

The Questionnaire on Teacher Interaction (QTI) (Wubbels et al., 1993) contains 48 statements on a five-point Likert scale (from 1 – never to 5 – always) that form eight factors. The scale was previously validated in a sample of Croatian participants (Šimić Šašić, 2012) and demonstrated optimal metric properties. The Teacher Uncertainty factor focuses on students' assessment of the teacher's uncertain and hesitant behaviour. The Dissatisfaction subscale focuses on the teacher's enforcement of silence in the classroom, as well as their criticism and expressions of dissatisfaction. The Admonishing factor assesses instances of the teacher's anger and the punishment of students. Furthermore, the Strictness factor focuses on the level of established discipline and

classroom rules. The Leadership factor measures the organisation and regulation of the classroom structure. The Helpfulness/Friendliness factor refers to the expression of interest, the assistance provided to students, and the teacher's sense of humour. The Understanding factor focuses on assessing the teacher's empathy, patience, and openness towards students. Finally, the Student Responsibility/Freedom subscale evaluates the provision of opportunities for independent work and the cultivation of a sense of freedom and responsibility.

The scores for each factor on each subscale were calculated by summing respective item values. An exploratory principal component analysis (PCA) with Varimax rotation was conducted (*KMO* = .97; Batlett's test of sphericity was significant, $\chi^2 = 24116.09$; $df = 1128$; $p < .001$) using item loadings greater than .30 and eigenvalues greater than 1. An eight-factor structure was identified, accounting for 53.87 % of the total variance. Two factors contained only two items each, and one item from each factor exhibited cross-loadings on other factors. Another factor comprised six items, but five of them loaded more strongly elsewhere. The eigenvalues of the three factors were relatively low (1.30, 1.27, 1.24), suggesting their potential for removal. Therefore, a five-factor confirmatory factor analysis (CFA) was conducted, accounting for 47.38 % of the total variance. Of these five, one factor contained four items with low primary loadings that cross-loaded more strongly onto other factors, alongside a low eigenvalue (1.30). Furthermore, one item failed to load adequately onto any factor, while another exhibited both a low loading (.30) and low communality (.21). Therefore, these two items were excluded from further analysis. The final factor structure of the questionnaire comprised four factors across 46 items, explaining 46.15 % of the total variance.

The structure somewhat corresponds to the original model. More precisely, the first factor comprised the Leadership and Understanding subscales, along with two items from the Helpfulness/Friendliness subscale (items related to helping). Therefore, this factor was named Leadership/Understanding/Helpfulness. The second factor comprised items from three subscales, namely Admonishing, Strictness, and Dissatisfaction, excluding one item that shifted to the first factor. This merged subscale was named Admonishing/Strictness/Dissatisfaction. The third factor consisted of the Teacher Uncertainty subscale, which remained largely independent, excluding one item that merged into the fourth factor. The fourth factor contained the Student Responsibility/Freedom subscale and items from the Helpfulness/Friendliness subscale (those related to friendliness). Thus, the subscale was named Friendliness/Student Freedom. All final factors demonstrated optimal internal reliabilities (Table 1).

Self-Efficacy Questionnaire for Children

The Self-Efficacy Questionnaire for Children (SEQ-C; Muris, 2001) measures children's perceived self-efficacy across three domains: emotional, social, and academic. The questionnaire has been previously validated on a sample of Croatian students, demonstrating satisfactory psychometric properties (Bubić & Goreta, 2015). The

questionnaire contains 24 items rated on a five-point Likert scale (1 – *not at all* to 5 – *completely*), which form three self-efficacy factors, each consisting of eight items. The Social Self-Efficacy factor focuses on perceived ability in peer communication and assertiveness. The Academic Self-Efficacy factor targets perceived competence in mastering learning and instructional content, as well as the fulfilment of academic aspirations. The Emotional Self-Efficacy factor measures the perceived ability to cope with negative emotions. The present study used the existing Croatian translation by Vulić-Prtorić and Sorić (2007).

Table 1
Descriptive indicators of the distribution of results on the scales used in the research

	N	*M*	*SD*	Range	*a*
Classroom Boredom	1032	75.96	20.116	29–128	.93
Personal Relevance	1176	20.05	5.036	6–30	.79
Critical Voice	1181	19.06	3.776	5–25	.68
Shared Control	1202	5.77	2.5	3–15	.62
Student Negotiation	1157	21.26	5.717	7–35	.80
Learning Uncertainty	1178	16.02	4.323	5–25	.72
Leadership/Understanding/Helpfulness	1139	56.00	11.254	15–75	.92
Friendliness/Student Freedom	1166	26.96	6.187	16–80	.91
Admonishing/Strictness/Dissatisfaction	1140	42.40	12.252	5–25	.74
Teacher Uncertainty	1187	10.36	3.708	10–50	.76
Social Self-Efficacy	1168	35.83	6.899	10–50	.77
Academic Self-Efficacy	1167	24.35	5.417	7–35	.82
Emotional Self-Efficacy	1153	22.34	5.795	7–35	.80
Total Self-Efficacy	1064	82.18	14.834	26–120	.88

	Skewness	Kurtosis	*K-S*
Classroom Boredom	0.10 (0.08)	-0.63 (0.15)	.04**
Personal Relevance	-0.27 (0.07)	-0.46 (0.14)	.07**
Critical Voice	-0.68 (0.07)	0.30 (0.14)	.11**
Shared Control	0.89 (0.07)	0.43 (0.14)	.15**
Student Negotiation	-0.10 (0.07)	-0.41 (0.14)	.06**
Learning Uncertainty	-0.24 (0.07)	-0.48 (0.14)	.07**
Leadership/Understanding/Helpfulness	-0.71 (0.07)	0.38 (0.14)	.07**
Friendliness/Student Freedom	0.06 (0.07)	0.08 (0.14)	.03**
Admonishing/Strictness/Dissatisfaction	0.37 (0.07)	-0.20 (0.15)	.04**
Teacher Uncertainty	0.68 (0.07)	0.25 (0.14)	.11**
Social Self-Efficacy	-0.48 (0.07)	0.53 (0.14)	.06**
Academic Self-Efficacy	-0.33 (0.07)	-0.01 (0.14)	.05**
Emotional Self-Efficacy	-0.36 (0.07)	-0.18 (0.14)	.07**
Total Self-Efficacy	-0.31 (0.07)	0.51 (0.15)	.04**

*Note. Standard errors for skewness and kurtosis are presented in parentheses. p < .05. **p < .01.*

An exploratory principal component analysis (PCA) with Varimax rotation was conducted (*KMO* = .91; Bartlett's test of sphericity was significant, $\chi^2 = 8258.50$, $df = 276$; $p < .001$) using item loadings greater than .30 and eigenvalues greater than 1. This analysis yielded five factors explaining 51.92 % of the total variance. However, since the eigenvalues indicated a three-factor solution, a subsequent confirmatory factor analysis (CFA) constrained to three factors was performed, accounting for 42.82 % of the total variance. The resulting factor structure was identical to the original structure established in the Croatian validation of the questionnaire (Vulić-Prtorić & Sorić, 2007), with the exception of a single item. In the original model, this item belonged to the Academic Self-Efficacy factor, but it failed to load adequately there in the present study. Because it demonstrated a satisfactory loading (.34) on the Social Self-Efficacy factor, it was reassigned to that subscale. The instrument's reliability was adequate; internal consistency for the entire 24-item scale was α = .88, with optimal reliabilities also observed for the individual factors (Table 1).

Results

The inter-factor correlations were satisfactory and deemed appropriate for conducting a hierarchical regression analysis (Table 2). Shared Control was excluded as a predictor because it did not significantly correlate with Classroom Boredom. Furthermore, Total Self-Efficacy was omitted from the model because it exhibited a high correlation coefficient (> .80) with the remaining self-efficacy subscales. The hierarchical regression analysis was conducted in four steps: demographic factors were entered in the first step, followed by the constructivist learning variables in the second, the teacher interaction variables in the third, and the self-efficacy variables in the fourth. The rationale for this specific sequence of variable entry is that demographic characteristics are relatively invariant; constructivist learning relies on the teacher's instruction, which requires a higher degree of interaction; and self-efficacy may, in turn, be contingent upon these preceding variables.

Demographic characteristics of the students were not shown to be significant predictors of classroom boredom, $F(4, 661) = 2.33$, $p = .06$. Variables added in the second step contributed significantly to the regression model, $F(8, 657) = 109.51$, $p < .001$, explaining 57.1 % of the variance. In the third step, teacher interaction variables were entered, explaining an additional 4.2 % of the variance. This new model indicates that the predictor variables are significant in predicting classroom boredom, $F(12, 653) = 86.39$, $p < .001$ (Table 3).

The inclusion of self-efficacy variables in the fourth step of HRA explained an additional 2.1 % of the variance, and the model was also significant in predicting Classroom Boredom, $F(15, 650) = 75.22$, $p < .001$. In the final, fourth step of the HRA, demographic variables (gender, residence [rural/urban], grade level, and academic achievement) and the variables Critical Voice, Student Negotiation, Leadership/Understanding/Helpfulness, and Learning Uncertainty were not statistically significant

Table 2
Results of the Pearson correlation coefficients for all examined variables

	1	2	3	4	5	6	7
1. Personal Relevance		.40**	.24**	.39**	.48**	.56**	.34**
2. Critical Voice			.19**	.47**	.25**	.36**	.28**
3. Shared Control				.36**	.03	.24**	.36**
4. Student Negotiation					.10**	.30**	.27**
5. Learning Uncertainty						.44**	.21**
6. Leadership/Understanding/ Helpfulness							.56**
7. Friendliness/Student Freedom							
8. Admonishing/Strictness/ Dissatisfaction							
9. Teacher Uncertainty							
10. Total Self-Efficacy							
11. Social Self-Efficacy							
12. Academic Self-Efficacy							
13. Emotional Self-Efficacy							
14. Classroom Boredom							

	8	9	10	11	12	13	14
1. Personal Relevance	-.46**	-.34**	.39**	.27**	.45**	.20**	-.59**
2. Critical Voice	-.20**	-.17**	.39**	.36**	.35**	.21**	-.24**
3. Shared Control	-.07*	.10**	.22**	.20**	.13**	.19**	-.04
4. Student Negotiation	-.13**	-.04	.34**	.34**	.29**	.16**	-.19**
5. Learning Uncertainty	-.55**	-.39**	.40**	.27**	.47**	.26**	-.68**
6. Leadership/Understanding/ Helpfulness	-.70**	-.51**	.36**	.26**	.43**	.22**	-.50**
7. Friendliness/Student Freedom	-.36**	-.11**	.24**	.21**	.20**	.18**	-.17**
8. Admonishing/Strictness/ Dissatisfaction		.63**	-.31**	-.19**	-.38**	-.20**	.58**
9. Teacher Uncertainty			-.15**	-.08**	-.23**	-.05	.43**
10. Total Self-Efficacy				.87**	.73**	.80**	-.43**
11. Social Self-Efficacy					.48**	.56**	-.24**
12. Academic Self-Efficacy						.39**	-.53**
13. Emotional Self-Efficacy							-.26**
14. Classroom Boredom							

Note. *$p < .05$; **$p < .01$

Table 3
Results of the hierarchical regression analysis for the Classroom Boredom criterion variable

	Classroom Boredom			
	Step 1	Step 2	Step 3	Step 4
	β	β	β	β
Gender	.03	.02	.03	.02
Place of residence (rural/urban)	.08*	-.03	-.04	-.03
Grade Level	.02	-.02	-.02	-.01
Academic Achievement	-.09*	-.05*	-.06*	-.01
Personal Relevance		-.35**	-.31**	-.28**
Critical Voice		.04	.04	.04
Student Negotiation		-.01	-.02	-.01
Learning Uncertainty		-.54**	-.44**	-.39**
Leadership/Understanding/Helpfulness			-.06	-.03
Friendliness/Student Freedom			.11**	.10**
Admonishing/Strictness/Dissatisfaction			.22**	.18**
Teacher Uncertainty			.00	.04
Social Self-Efficacy				.07*
Academic Self-Efficacy				-.17**
Emotional Self-Efficacy				-.09**
	$R = .12$	$R = .76$	$R = .78$	$R = .78$
	$Rc^2 = .01$	$Rc^2 = .57$	$Rc^2 = .61$	$Rc^2 = .63$
		$\Delta R^2 = .56$	$\Delta R^2 = .04$	$\Delta R^2 = .02$
	$F = 2.33$	$F = 109.51$	$F = 86.39$	$F = 75.22$
	$P = .055$	$p < .001$	$p < .001$	$p < .001$

*Note. *p < .05; **p < .01.*

predictors of Classroom Boredom. Specifically, seven predictors were statistically significant in explaining Classroom Boredom variance. These predictors were Personal Relevance (β = -.28, $p < .01$), Learning Uncertainty (β = -.39, $p < .01$), Friendliness/ Student Freedom (β = .10, $p < .01$), Admonishing/Strictness/Dissatisfaction (β = .18, $p < .01$), Social Self-Efficacy (β = .07, $p < .05$), Academic Self-Efficacy (β = -.17, $p < .01$), and Emotional Self-Efficacy (β = -.06, $p < .01$). The final model explains 63.4 % of the variance. Given the directions of the regression coefficients, it is reasonable to conclude that students who perceive lower personal relevance and fewer opportunities for scientific inquiry, greater friendship and freedom from teachers, and a higher level of strictness and admonishment, and who see themselves as less academically and emotionally effective but more socially effective, experience higher levels of classroom boredom (Table 3).

Discussion

To determine the contribution of constructivist learning, teacher interaction, and self-efficacy to student boredom in the classroom, Pearson correlation coefficients

were calculated, and a hierarchical regression analysis was conducted. The results showed that participants who perceived higher Personal Relevance, Critical Voice, Student Negotiation, and Learning Uncertainty reported lower classroom boredom. Similarly, lower boredom was reported by participants who perceived higher Leadership/Understanding/Helpfulness and higher Friendliness/Student Freedom, as well as lower Admonishing/Strictness/Dissatisfaction and lower *Teacher Uncertainty* from their teachers. The self-efficacy subscales (Social, Academic, and Emotional), as well as the total score on the Self-Efficacy Questionnaire (Total Self-Efficacy), indicate that participants who perceived higher self-efficacy also perceived lower boredom in class.

The results of Pearson correlation coefficients indicated that participants with higher intrinsic motivation experience lower classroom boredom, which was further confirmed by the HRA results. It is evident that some results obtained using Pearson correlations and regression coefficients differ. Pearson correlation coefficients showed that higher assessments of the extent to which students are provided with opportunities for scientific inquiry result in lower boredom, whereas the results of the hierarchical analysis indicate that this leads to higher boredom. In addition, Pearson coefficients indicated that participants experience lower boredom when teachers relate to them in a friendly manner and provide opportunities for independent work and a sense of freedom; however, the HRA results indicated the opposite. These results suggest that excessive freedom, overabundant independent student activity without teacher guidance, and the lack of established boundaries may trigger a more intense sense of classroom boredom in the long term. Finally, the HRA indicates that higher Social Self-Efficacy is associated with significant boredom, even though a higher overall sense of self-efficacy generally results in lower boredom.

All variables were positively intercorrelated, with the exception of the Admonishing /Strictness/Dissatisfaction and Teacher Uncertainty, which were negatively correlated with the other variables while being positively correlated with each other. In the HRA, Shared Control was not included as a predictor variable because it did not show a significant correlation with Classroom Boredom. Additionally, Total Self-Efficacy was excluded from the model due to high correlation coefficients with the other self-efficacy subscales. Participant gender was entered as a control variable in the first step, followed by the constructivist learning variables in the second step, teacher interaction variables in the third step, and finally, self-efficacy variables in the fourth step. Gender did not prove to be a significant predictor, although it was assumed to be significant based on previous research indicating that girls are more learning-oriented while boys are more effort-avoidant (Stanišak Pilatuš et al., 2013). The constructivist learning variables added in the second step contributed significantly to the regression model, explaining 56.7 % of the variance. An additional 4 % of the variance was explained by introducing teacher interaction variables in the third step, and an additional 2.5 % by the self-efficacy variables. The final model explains 63.3 % of the variance. Considering the direction of the regression coefficients, it can be concluded that participants who

perceive lower personal relevance and fewer opportunities for scientific inquiry, greater friendship and freedom from their teachers, higher levels of strictness and admonishment, and who see themselves as less emotionally and academically effective but more socially effective, experience higher levels of boredom in class.

Previous research has shown that teacher interaction and the type of interpersonal relationship a teacher develops with students in the classroom are associated with student achievement and motivation, and that teacher guidance, friendship, and understanding improve student achievement (Fraser et al., 2010).

The results obtained indicate that constructivist learning, teacher interaction, and self-efficacy are significant predictors of classroom boredom.

Conclusion

In accordance with the research objective, the obtained results, their comparison with existing studies, and verification against established theories of teaching and learning, several conclusions can be drawn. Primarily, constructivist learning, teacher interaction and self-efficacy are statistically significant predictors of student boredom in the classroom. It is evident that classroom boredom will be lower when students find the learning material personally relevant; however, excessive freedom, a lack of established boundaries, and overabundant independent student activity can, consequently, significantly increase classroom boredom. In general, higher self-efficacy, critical thinking, and questioning of the learning material contribute to lower boredom, whereas more positive social relationships and self-assertiveness contribute to higher levels of classroom boredom.

Finally, several limitations of this research should be noted. First, the study uses a quantitative methodological approach, which precludes a deeper epistemological understanding of the investigated issues. Second, based on factor analyses, removing certain items altered the questionnaires' structure, potentially affecting the content validity of the data collection instruments. Furthermore, the research design is correlational; thus, it is not possible to determine causal relationships among the investigated concepts. The possibility of socially desirable responding also cannot be ruled out. Ultimately, this research was conducted exclusively with seventh- and eighth-grade elementary school students; to obtain more comprehensive insights, future studies should expand the sample to include all primary and secondary school grade levels. These limitations also serve as recommendations for further research within this field.

References

Alagić, A. (2021). Odgojno-obrazovni efekti istraživačkog rada u nastavi metodike okoline [educational effects of pupils' research work in teaching of my environment subject]. *Društvene i humanističke studije, 11*(1), 283–296.

Astutik, E. P. (2018). Questionnaire on teacher interaction (QTI) in Assessing Classroom Learning Environment: a literature review: lingkungan pembelajaran, kuesioner QTI. *Buana Pendidikan: Journal Fakultas Keguruan Dan Ilmu Pendidikan*, *11*(21). https://doi.org/10.36456/bp.vol11.no21.a1402

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

Bandura, A.(1989). Self-regulation of motivation and action through internal standards and goal systems. In L. A. Pervin (Ed.), *Goal concepts in personality and social psychology*, (pp. 19–85). Erlbaum.

Bognar, L. (2006). Suradničko učenje u sveučilišnoj nastavi [Cooperative learning in higher education]. *Život i škola, 15–16*(1–2), 7–16.

Bognar, L., & Dubovicki, S. (2012). Emocije u nastavi [Emotions in the teaching process]. *Croatian Journal of Education, 14*(1), 135–153.

Bognar, L., & Matijević, M. (2005). *Didaktika* [Didactics]. Školska knjiga.

Bong, M., & Skaalvik, E. M. (2003). Academic self-concept and self-efficacy: How different are they really? *Educational Psychology Review, 15*(1), 1–40.

Bošnjak, Z. (2009). Primjena konstruktivističkog poučavanja i kritičkog mišljenja u srednjoškolskoj nastavi sociologije: pilot-istraživanje [Application of constructivist teaching and critical thinking to sociological education at secondary school level: A pilot study]. *Revija za sociologiju, 40*(39), (3–4), 257–277.

Brekelmans, M., Levy, J., & Rodriguez, R. (1993). A typology of teacher communication style. In Wubbels, T., & Levy, J. (Eds.), *Do you know what you look like?* (pp. 46–55). Falmer Press.

Bubić, A., & Goreta, I. (2015). Akademske i socijalne odrednice općeg zadovoljstva školom [The role of academic and social factors in explaining school satisfaction]. *Psihologijske teme, 24*(3), 473–493.

Buljubašić-Kuzmanović, V. (2007). Studentska prosudba učinkovitosti integrativnog učenja [students' judgement of the effectiveness of interactive learning]. *Odgojne znanosti, 9*(2), 147–160.

Čelič, A. (2007). *Igre nekoč in danes. Kulturna dediščina v kurikulu vrtca*. Skupnost vrtcev Slovenije.

Daschmann, E.C., Goetz, T., & Stupnisky, R.H. (2011). Testing the predictors of boredom at school: Development and validation of the precursors to boredom Scales. *British Journal of Educational Psychology,* 81, 421–440. https://doi.org/10.1348/000709910X526038

Domović, V. (2004). Školsko ozračje i učinkovitost škole. Naklada Slap.

Drobot, L., & Roșu, M. (2012). Teachers' leadership style in the classroom and their impact upon high school students. *Scientific Research and Education in the Air Force, 1*. https://www.researchgate.net/publication/298714224

Džinkić, O., & Milutinović, J. (2018). Ideje konstruktivizma u savremenoj školskoj praksi [Ideas of constructivism in the contemporary school practice]. *Zbornik Odseka za pedagogiju, 27,* 129–149.

Fabijanić, V. (2014). Projektna nastava: primjena u izradi istraživačkih radova učenika. *Educatio Biologiae*, *1*, 89–96.

Fahlman, S. A., Mercer-Lynn, K. B., Flora, D. B., & Eastwood, J. D. (2013). Development and validation of the Multidimensional State Boredom Scale. *Assessment, 20*(1), 68–85. https://doi.org/10.1177/1073191111421303

Fraser, B. J., Aldridge, J. M., & Soerjaningsih, W. (2010). Teacher-student interpersonal behaviour and student outcomes among university students in Indonesia. *The Open Education Journal, 3,* 21–33.

Goetz, T., & Frenzel, A. C. (2006). Phänomenologie schulischer Langeweile (Phenomenology of boredom at school). *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie, 38*(4), 149–153.

Goetz, T., Frenzel, A. C., Hall, N. C., Nett, U. E., Pekrun, R., & Lipnevich, A. A. (2013). Types of boredom: An experience sampling approach. *Motivation and Emotion. 38*(3), 401–419. https://doi.org/10.1007/s11031-013-9385-y

Grm, J. (2021). Učenje kroz didaktičke igre. *Varaždinski učitelj, 4*(6), 325–330.

Huitt, W. (2003). *A transactional model of the teaching/learning process.* Valdosta State University.

Ivanov, L., & Penezić, Z. (2001). Samoefikasnost. Pregled teorije. *Radovi, Razdio filozofije, psihologije, sociologije i pedagogije, 39*(16), 113–142.

Jurčić, M. (2006). Učenikovo opterećenje nastavom i razredno-nastavno ozračje [The school workload of students – from the classroom factor and the teaching atmosphere to factors of satisfaction with the school]. *Odgojne znanosti, 8*(2), 329–346.

Kirriemuir, J., & McFarlane, A. (2004). *Literature review in games and learning*. HAL Open Science.

Kögler, K., & Göllner, R. (2018). Control-value appraisals predicting students' boredom in accounting classes: A continuous-state-sampling approach. *Empirical Research in Vocational Education and Training*, *10*(4), 1–16. https://doi.org/10.1186/s40461-018-0065-8

Koludrović, M., & Radnić, I. (2013). Doprinos nekih osobnih i socijalnih čimbenika u objašnjenju školskog uspjeha u ranoj adolescenciji [The contribution of some personal and social factors in explaining school achievement in early adolescence]. *Pedagogijska istraživanja, 10*(1), 65–79.

Koludrović, M., & Reić Ercegovac, I. (2014). Uloga razredno-nastavnog ozračja u objašnjenju ciljnih orijentacija učenika [The role of classroom environment in students' goal orientations]. *Društvena istraživanja, 23*(2), 283–302. https://doi.org/10.5559/di.23.2.04

Kyriacou, C. (2001). *Temeljna nastavna umijeća* [Essential teaching skills]. Educa.

Larson, R. W., & Richards, M. H. (1991). Boredom in the middle school years: Blaming schools versus blaming students. *American Journal of Education, 99*(4), 418–433. https://doi.org/10.1086/443992

Letina, A. (2019). Development of students' learning to earn competence in primary science. *Education Science, 10*(11), 1–14.

Luketić, D. (2016). Ispitivanje odnosa samoprocjene poduzetnosti i samoefikasnosti učenika osnovne škole [Exploring the relationship between perceptions of being enterprising and self-efficacy among elementary school pupils]. *Život i škola, 62*(1), 125–137.

Maddux, J. E. (2002). Self-efficacy: The power of believing you can. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 277–287). Oxford University Press.

Milanović Dobrota, B., & Radić Šestić, M. (2012). Značaj modela samoefikasnosti u vaspitno-obrazovnom radu s adolescentima [Significance of self-efficacy model in educational work with adolescents]. *Specijalna edukacija i rehabilitacija, 11*(4), 637–655.

Moroldo, G. K. (1986). Shyness, boredom and grade point average among college students. *Psychological Reports, 59*(2), 395–398.

Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. *Journal of Counseling Psychology, 38,* 30–38.

Muris, P. A. (2001). Brief questionnaire for measuring self-efficacy in youths. *Journal of Psychopathology and Behavioral Assessment, 23*, 145–149. https://doi.org/10.1023/A:1010961119608

Nett, U. E., Daschmann, E. C., Goetz, T., & Stupnisky, R. H. (2016). How accurately can parents judge their children's boredom in school? *Frontiers in Psychology, 7,* Article 770. http://doi.org/10.3389/fpsyg.2016.00770

Nielsen, S. G. (2004). Strategies and self-efficacy beliefs in instrumental and vocal individual practice: A study of students in higher music education. *Psychology of Music, 32*(4), 418–431. https://doi.org/10.1177/0305735604046099

Nikčević-Milković, A. (2004). Aktivno učenje na visokoškolskoj razini. *Život i škola, 12*(2), 47–54.

Nikčević-Milković, A., Rukavina, M., & Galić, M. (2011). Korištenje i učinkovitost igre u razrednoj nastavi [The use and efficiency of games in the class teaching]. *Život i škola, 57*(5), 108–121.

Opić, S. (2016). Interpersonal relations in school. *International Journal of Cognitive Research in Science Engineering and Education 4*(2), 9–21. https://doi.org/10.5937/IJCRSEE1602009O

Pecko, L. (2015). Utjecaj problemske nastave na aktivnost učenika u nastavi prirode [The impact of problem-based instruction on students' activity in science classes]. *Metodički obzori, 10*(2), 69–88.

Peko, A., Sablić, M., & Livazović, G. (2006). Suradničko učenje u mlađoj školskoj dobi [Cooperational learning for young learners]. *Život i škola, 15–16*(1–2), 17–28.

Pekrun, R. (2006). The control-value theory of achievement emotions: Assumptions, corollaries and implications for educational research and practice. *Educational Psychology Review 18*(4), 315–341. https://doi.org/10.1007/s10648-006-9029-9

Pekrun, R., Goetz, T., Titz, W., & Perry, R. P. (2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. *Educational Psychologist, 37*(2), 91–105. https://doi.org/10.1207/S15326985EP3702_4

Perkins, R. E., & Hill, A. B. (1985). Cognitive and affective aspects of boredom. *British Journal of Psychology*, 76(2), 221–234. https://doi.org/10.1111/j.2044-8295.1985.tb01946.x

Pintrich, P. R., & Garcia, T. (1991). Student goal orientation and self-regulation in the college classroom. In M. Maehr, & P. R. Pintrich (Eds.), *Advances in motivation and achievement: Goals and self-regulatory processes (7)* (pp. 371–402). JAI Press.

Prat-Sala, M., & Redford, P. (2010). The interplay between motivation, self-efficacy, and approaches to studying. *British Journal of Educational Psychology, 80*(2), 283–305.

Princ, M., & Felder, R. (2007). The many faces of inductive teaching and learning. *Journal of College Science Teaching, 36*(5), 14–20.

Rudić, L. (2022). *Uloga konstruktivističkog učenja, nastavničke interakcije i samoučinkovitosti u dosadi na nastavi kod učenika osnovnog obrazovanja* [The role of constructivist learning, teacher interaction and self-efficacy in classroom boredom among elementary education students]. (Unpublished doctoral dissertation). Sveučilište u Zagrebu, Učiteljski fakultet. Zagreb.

Rupčić, I., & Kolić-Vehovec, S. (2004). Ciljna orijentacija, samohendikepiranje i samoefikasnost srednjoškolaca [Goal orientation, self-handicapping and self-efficacy of high-school students]. *Psihologijske teme, 13,* 105–117.

Septi Andrini, V. (2016). The Effectiveness of Inquiry Learning Method to Enhance Students` Learning Outcome: A Theoretical and Empirical Review. *Journal of Education and Practice, 7*(3), 38–42.

Sharp, J. G., Hemmings, B., Kay, R., Murphy, B., & Elliot, S. (2016). Academic boredom among students in higher education: a mixed-methods exploration of characteristics, contributors and consequences. *Journal of Further and Higher Education, 41*(5), 657–677. https://doi.org/10.1080/0309877X.2016.1159292

Stanišak Pilatuš, I., Jurčec, L., & Rijavec, M. (2013). Ciljne orijentacije u učenju: dobne i spolne razlike i povezanost sa školskim uspjehom [Students goal orientation: Age and gender differences and correlation with academic achievement]. *Napredak, 154*(4), 473–491.

Šimić Šašić, S. (2011). Interakcija nastavnik-učenik: Teorije i mjerenje [Teacher-student interaction: Theories and measurement]. *Psihologijske teme, 20*(2), 233–260.

Šimić Šašić, S. (2012). Kvaliteta interakcije nastavnika i učenika na različitim razinama obrazovanja (Unpublished doctoral dissertation), Zagreb: Filozofski fakultet.

Šimić Šašić, S., & Sorić, I. (2011). Kvaliteta interakcije nastavnik-učenik: Povezanost s komponentama samoreguliranog učenja, ispitnom anksioznošću i školskim uspjehom [Teacher-student quality of interaction: Relationship with components of self-regulated learning, examination anxiety and school achievement]. *Suvremena psihologija 14*(1), 35–55.

Šimić Šašić, S., Šimunić, A., & Klarin, M. (2021). The mediating role of teacher-pupil interaction in the relationship of pupil temperament to self-esteem and school success. *Društvena istraživanja, 30*(3), 509–531. https://doi.org/10.5559/di.30.3.03

Taylor, P. C., Fraser, B. J., & Fischer, D. (1997). Monitoring constructivist classroom learning environments. *International Journal of Educational Research, 27*(4), 293–302.

Topolovčan, T. (2023). What is wrong with constructivist teaching? Elaboration, recapitulation and synthesis of theoretical and historical controversies, *Školski vjesnik, 72*(1), 183–208. https://doi.org/10.38003/sv.72.1.9

Trogrlić, I. (2012). *Dosada u školi: odnos darovitosti, dosade i školskog postignuća* [Boredom in school: Relationship of gift, boredom and academic achievement] (Unpublished master's thesis). Sveučilište u Zadru.

Trogrlić, I., & Sorić, I. (2014). Skala dosade na nastavi. In V. Ćubela Adorić, Z. Penezić, A. Proroković, & I. Tucak (Eds.), *Zbirka psihologijskih skala i upitnika* (Vol. 7, pp. 8–13). Sveučilište u Zadru.

Ušić, E. (2017). O dosadi: nacrt za moguću kritiku [On boredom: A draft for a possible critique]. *Narodna umjetnost: hrvatski časopis za etnologiju i folkloristiku, 54*(2), 69–82.

Vulić-Prtorić, A., & Sorić, I. (2007). Upitnik samoefikasnosti za djecu. In K. Lacković-Grgin, A., Proroković, V. Ćubela, & Z. Penezić, Z. (Eds.), *Zbirka psihologijskih skala i upitnika* (Vol. 3, pp. 87–93). Sveučilište u Zadru.

Wang, C., Hu, Y., Zhang, X., Wang, J., Cui, G., & Cui, G. (2020). Stability of the mitigating effect of students' perceived teacher enthusiasm on class-related boredom: Moderating role of boredom proneness and perceived task difficulty. *International Journal of Environmental Research and Public Health, 17*(8), 26–45. https://doi.org/10.3390/ijerph17082645

Wubbels, T., Creton, H. A., & Hooymayers, H. P. (1985). Discipline problems of beginning teachers, interactional teacher behaviour mapped out [Paper presentation]. Annual Meeting of the American Educational Research Association, Chicago, IL, United States. http://www.eric.ed.gov/PDFS/ED260040.pdf

Wubbels, T., Créton, H., Levy, J., & Hooymayers, H. (1993). The model for interpersonal teacher behavior. In T. Wubbels, & J. Levy (Eds.), *Do you know what you look like? Interpersonal relationships in education* (pp. 13–28). Falmer Press/Taylor & Francis, Inc.

Zugaj, B. (2014). Utjecaj projektne nastave na promjenu stava kod učenika prema nastavnim sadržajima iz Biologije. *Educatio Biologiae, 1,* 18–26.

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Konstruktivističko učenje, nastavnička interakcija i samoučinkovitost kao prediktori dosade na nastavi među učenicima osnovne škole u Hrvatskoj

Sažetak

Cilj istraživanja bio je ispitati obilježja i prediktorsku ulogu konstruktivističkoga učenja, nastavničke interakcije i osjećaja samoučinkovitosti u učeničkoj dosadi na nastavi učenika sedmih i osmih razreda osnovne škole (N = 1249) u Republici Hrvatskoj. Rezultati istraživanja pokazali su kako su konstruktivističko učenje, nastavnička interakcija i samoučinkovitost značajni prediktori dosade na nastavi kao kriterija. Pokazalo se kako će doživljaj dosade na nastavi biti niži ako učenici imaju veću intrinzičnu motivaciju učenja, odnosno ako im je zanimljivo ono što uče i ako smatraju kako je ono što uče primjenjivo u stvarnom životu. Rezultati ukazuju da prevelika sloboda, izostanak jasnih granica, pretjerano oslanjanje na samostalne aktivnosti učenika bez primjerenoga nastavničkog vodstva, dugoročno među učenicima mogu odvesti do povećanoga osjećaja dosade na nastavi. Pokazalo se kako veći osjećaj samoučinkovitosti rezultira nižom dosadom, a hijerarhijska analiza pokazala je kako veća socijalna samoučinkovitost ipak rezultira većom dosadom, što pokazuje kako učenici s razvijenim pozitivnim odnosima s vršnjacima i oni koji se bore za svoja prava, a pri tome ne narušavaju prava drugih, dugoročno gledajući, mogu doživjeti veći osjećaj dosade na nastavi.

Ključne riječi: *konstruktivističko učenje; nastavnička interakcija; osnovna škola; samoučinkovitost; učenička dosada*

Uvod

Istraživanja emocija u školskome okružju pokazala su kako su dominantne emocije strah i dosada, odnosno neugodne emocije (Bognar i Dubovicki, 2012). Prema Pekrunovoj teoriji kontrole i vrijednosti emocija postignuća, dosada je negativna deaktivirajuća emocija koja negativno utječe na učenje i postignuće (Pekrun, 2006). Prema istraživanjima doživljava se u školi češće i od anksioznosti (Trogrlić i Sorić,

2014), a pokazalo se kako čak 44 % učenika doživljava dosadu u razredu (Daschmann i sur., 2011).

Dosada ovisi o vanjskom podražaju, odnosno u školskom okružju bi bila vezana uz način predavanja samoga nastavnika. Dosadašnja istraživanja dosade na nastavi povezuju je s nižim akademskim postignućem, odsutnošću, odustajanjem od aktivnosti, odustajanjem od škole i s adolescentskom delinkvencijom. Pokazalo se kako je razina dosade pozitivno povezana s procjenom zahtjevnosti nastave (Trogrlić, 2012) te se očekuje kako će razina dosade biti niža ako je nastavni proces poticajan i ako učenici u njemu aktivno sudjeluju, odnosno kako će učenici koji vjeruju u osobnu učinkovitost rjeđe iskusiti osjećaj dosade na nastavi.

S obzirom na suvremene promjene odgojno-obrazovnoga sustava u kojima je naglasak na suvremenim i poticajnim načinima rada i na učeničkoj aktivnosti, suvremena nastava trebala bi smanjiti osjećaj dosade, a upravo je motivacija i poticanje učenika na aktivnost jedan od najvećih izazova za nastavnike uz stvaranje poticajnoga i pozitivnoga razrednog ozračja.

Sve veći interes za razredno ozračje javlja se razvojem konstruktivističke nastave, a nastavno ozračje općenito se definira kao kvaliteta međusobnih odnosa sudionika nastavnoga procesa te je nastavnička interakcija ključan prediktor realizaciji kvalitetne nastave. Neka istraživanja pokazuju kako autoritativnost nastavnika može među učenicima smanjiti osjećaj autonomije i intrinzične motivacije te se razvila potreba za istraživanjem kojemu je cilj ispitati obilježja i ulogu konstruktivističkoga učenja, nastavničke interakcije i samoučinkovitosti kao prediktora učeničke dosade na nastavi kao kriterija.

Dosada na nastavi

Istraživanja dosade kao emocionalnoga stanja koje je opisivano kao odbojno intenziviraju se osamdesetih godina dvadesetoga stoljeća. Nastojeći stvoriti sveobuhvatniji model, dosadu se povezuje s monotonijom koja rezultira visokim stupnjem frustracije i nelagode, a pripisuje joj se niski stupanj interesa i koncentracije (Perkins i Hill, 1985). Primjećuje se njezina negativna povezanost sa školskim uspjehom u visokom obrazovanju (Moroldo, 1986) te se počinje istraživati u školskom okružju, a definira ju se kao intenzivnu, kratku psihičku i fiziološku promjenu koja se javlja kao odgovor na navodno besmisleni obrazovni podražaj (Pekrun i sur., 2002; Sharp i sur., 2016). Obilježja dosade su nezadovoljstvo i niska razina uzbuđenja, a uzrokuje razmišljanje o nebitnim stvarima (sanjarenje), osjećaj produženoga vremena i nastojanje da se napusti dosadna situacija (Goetz i sur. 2014, prema Wang i sur., 2020). Tjelesne promjene prilikom doživljavanja dosade su pospanost, zijevanje, mlitavo držanje tijela i hladne ruke (Pekrun i sur., 2014, prema Wang i sur., 2020). Teorije dosade mijenjale su se tijekom vremena, ali zajednička im je karakteristika da obuhvaćaju istovremenu želju i nemogućnost pojedinca da se uključi u poticajnu i zadovoljavajuću aktivnost (Fahlman i sur., 2013).

Koncept dosade je višeslojan, relacijski, situacijski i višeznačan, odnosno stvara se u odnosu, manifestira se u pojedinim situacijama te ovisi o subjektivnim željama, interesima i očekivanjima (Elpidourou, 2015, prema Ušić, 2017) pa postoji više podjela tipova dosade. Goetz i Frenzel (2006) predlažu model četiriju vrsta dosade koje se temelje na stupnju valencije i uzbuđenja, a to su: ravnodušna, kalibrirajuća, pretraživačka i reaktantna, a prema rezultatima novijih istraživanja predlaže se i peta vrsta – apatična dosada (Goetz i sur., 2013). Najrjeđi oblik dosade je ravnodušna dosada koja se opisuje kao opuštajuća. U istraživanju u kojima su sudionici bili srednjoškolci (N = 1432) 11 % srednjoškolaca navodi ovu vrstu dosade koju karakterizira tzv. veseli umor. Za kalibrirajuću dosadu karakteristično je „lutanje misli", a učenici koji osjećaju ovaj tip dosade žele promijeniti situaciju u kojoj se nalaze. Neugodan nemir i aktivna potraga za izlazom iz trenutačne situacije karakteristični su za pretraživačku dosadu. Kod doživljaja reaktantne dosade, osoba je snažno motivirana za bijeg iz situacije u kojoj se nalazi i želi izbjeći one koji su za tu situaciju odgovorni (nastavnika, nastavni predmet, radne materijale). Apatičnu dosadu karakterizira nisko uzbuđenje i osjećaj bespomoćnosti ili depresije, a u istraživanju gore navedenih autora doživjelo ju je čak 36 % srednjoškolaca. Autori navode da se s nastavom i školovanjem općenito najčešće povezuje reaktantna dosada, a sa slobodnim vremenom ravnodušna dosada (Goetz i sur., 2013).

Istraživanja prediktora dosade učenika pokazala su kako je dosada povezana s osobnim i situacijskim faktorima, ali i s dinamikom njihove interakcije. Učenici kojima nedostaje interesa za neki školski predmet, dosađuju se kada je nastavna dinamika niska (Kögler i Göllner, 2018). Dosadašnja istraživanja dosade nadalje su pokazala kako se dosada na nastavi najčešće javlja kada nastavnici samostalno određuju aktivnosti bez mogućnosti da učenici iznesu svoje prijedloge (Larson i Richards, 1991), a učenici najčešćom pretečom dosade navode obilježja nastave (Lohrmann, 2008, prema Nett i sur., 2016). Visoka razina dosade u visokoj je pozitivnoj korelaciji s visokim sposobnostima učenika (Larson i Richards, 1991). Rezultati navode kako je stil poučavanja nastavnika od velike važnosti za nastavni proces, odnosno za pojavu dosade na nastavi (Nett i sur., 2016).

U suvremenoj nastavi razvijaju se nove strategije poučavanja koje spadaju u domenu konstruktivističke didaktike i neurodidaktike. Dosada je složena ljudska emocija te ju je potrebno sagledati i u širem kontekstu učenja, interakcije glavnih sudionika nastave i samoučinkovitosti.

Konstruktivistička nastava i učenje

Konstruktivizam je definiran kao konstruiranje spoznaje i znanja u društvenoj ili individualnoj interakciji s društvenom i/ili fizičkom okolinom na temelju vlastitih predznanja, iskustava, motivacije i emocija (Topolovčan, 2023). Konstruktivizam se razmatra kao filozofska (epistemološka) teorija spoznaje i prirode znanja, kao psihološka teorija ljudskoga učenja te kao didaktička teorija nastave i obrazovanja. Postoji nekoliko teorijskih pristupa konstruktivističkom učenju i nastavi. U tom

pogledu govori se, između ostaloga, o personalnom i kognitivnom, ali u svojoj suštini moguće ga je kategorizirati kao radikalni i socijalni konstruktivizam. Radikalni se definira kao samostalno i samoregulirano konstruiranje znanja u interakcijskom djelovanju s fizičkom okolinom, a predstavnici su mu von Glasersfeld i Piaget. Socijalni konstruktivizam definiran je kao osobno konstruiranje vlastita znanja u interakciji s fizičkom okolinom, ali i u komunikaciji s drugima i društvenom okolinom, a njegov glavni predstavnik je Vygotsky (Topolovčan, 2023).

Istraživanja sustavno pokazuju kako istraživačka nastava, koja nije dovoljno zastupljena u odgojno-obrazovnom procesu, pruža značajne obrazovne dobrobiti učenicima u učenju i akademskom postignuću, razvija kritičko mišljenje i sposobnost rješavanja problema te bolju motivaciju za učenje (Alagić, 2021; Letina, 2016; Princ i Felder, 2007; Septi Andrini, 2016). Iako problemska nastava integrira razne aktivne metode učenja i primjenu multimedija te omogućuje intenzivnije učenje i bolju motivaciju za učenjem, nastavnici smatraju da ju je teško organizirati (Pecko, 2015). Projektnu nastavu odlikuje razvoj komunikacijskih, istraživačkih, organizacijskih i kritičkih vještina (Fabijanić, 2014). Istraživanja pokazuju kako učenici i u takvom nastavnom aranžmanu ne žele biti pasivni, već aktivni dionici (Zugaj, 2014). Nadalje, učenje igrom kao konstruktivistički aranžman osnažuje učenikovo opažanje, prezentiranje i zaključivanje (Čelič, 2007), a od nastavnika se očekuje poticanje motivacije učenika za učenje igrom (Grm, 2021). Igranje videoigara, koje su rijetko integrirane u nastavu (Kirriemuir i McFarlane, 2004) razvija sposobnost planiranja, komunikacije, pregovaračkih vještina i razmišljanja (Nikčević-Milković i sur., 2011). Integrirana nastava doprinosi refleksiji i sposobnosti suradnje i implementiranju ideja u praksu (Buljubašić-Kuzmanović, 2007). Suradnička nastava razvija učeničku odgovornost, samopouzdanje, smanjuje anksioznost vezanu uz učenje, povećava motivaciju (Peko i sur., 2006) te potiče kreativnost i pozitivne socijalne odnose (Bognar, 2006). U istraživanju Nikčević-Milković (2004) studenti pozitivno procjenjuju aktivne oblike konstruktivističke nastave te njezinu dobrobit poput rješavanja problema, suradnje, kritičkoga odnosa i kreativnosti. Konstruktivistička nastava potiče razvoj intrinzične motivacije te participaciju u nastavi i interaktivnu komunikaciju (Džinkić i Milutinović, 2018). Pored brojnih obrazovnih dobrobiti, konstruktivistička nastava sadrži i određene nedostatke, kao što je relativiziranje uloge nastavnika i objektivnoga znanja, mogućnost optimalnoga vrednovanja te zanemarivanje socijalnih, etičkih i moralnih pitanja (Topolovčan, 2023).

Nastavnička interakcija

Kvaliteta nastavne okoline od iznimne je važnosti za proces učenja i poučavanja, dok ozračje u učionici uvelike utječe na ishode učenja (Astutik, 2018) i predstavlja važan čimbenik djetetova emocionalnoga, kognitivnoga i socijalnoga razvoja učenika (Domović, 2004). Strukturu razrednoga ozračja određuju događanja unutar razreda koja učenici percipiraju, a važne čimbenike te strukture čine ispitna anksioznost, razredna kohezivnost, učenikovo opterećenje nastavom, nastavnikova podrška (Jurčić, 2006), motivacija učenika za rad te očekivanje uspjeha (Kyriacou, 2001). Optimalni

izazovi i bogati izvori stimulacije unutar razrednoga ozračja mogu pozitivno utjecati na povećanje intrinzične (unutarnje) motivacije učenika, što rezultira većim osjećajem zadovoljstva te višim akademskim uspjehom (Koludrović i Reić Ercegovac, 2014). Razredno ozračje kreira nastavnik/nastavnica jer on/ona stvara određeno socijalno ozračje unutar razreda, a ono može varirati od potpuno slobodne, preko demokratske do agresivne i apatične klime (Bognar i Matijević, 2005). Zadnjih dvadesetak godina istražuje se interakcija nastavnika i učenika unutar razrednoga konteksta, a u njihovo središte stavljaju se poučavanje, podrška učeničke autonomije, rukovođenje razredom ili socijalno-emocionalni odnosi koji se pokušavaju dovesti u vezu s učeničkim školskim postignućem (Šimić Šašić i Sorić, 2011). Prema Šimić Šašić (2011), model interpersonalnoga ponašanja nastavnika temeljen je na Learyjevom modelu (prema Wubbels i sur., 1985), a prema njemu se razlikuje osam tipova nastavničkoga ponašanja: vodstvo, pomaganje/prijateljstvo, razumijevanje, davanje slobode učenicima, nesigurnost, nezadovoljstvo, opominjanje i strogost (prema Brekelmans i sur., 1993) te osam tipova interpersonalnih odnosa nastavnik-učenik: direktivan, tolerantan, autoritativan, tolerantan i autoritativan, nesigurno-tolerantan, nesigurno-agresivan, represivan, nastavnik s „mučnim/teškim" stilom.

Prema Drobot i Rosu (2012), nastavnički stil poučavanja, njegova realizacija nastave i rukovođenje razredom imaju utjecaj na ponašanje učenika, a način na koji nastavnik organizira odnose s učenicima bitan je za emocionalnu i socijalnu klimu, kao i za samo usvajanje predmetnih sadržaja. Interakcija nastavnik-učenik može biti pozitivna (nastavnici pružaju visoku podršku i visoki izazov te koriste strategije aktivnoga poučavanja) i negativna (nastavnici pružaju kako nisku podršku tako i niski izazov). Negativnu interakciju ostvaruju nastavnici s autoritarnim stilom rukovođenja, koji imaju negativan stav prema poučavanju te visoka očekivanja od učenika (Šimić Šašić, 2011). Viša akademska postignuća učenika postižu se u razredima direktivnih i tolerantnih nastavnika, a niža postignuća učenika u razredima gdje su uglavnom nesigurno-agresivni i nesigurno-tolerantni nastavnici (Rickards i sur., 2003, prema Šimić Šašić, 2011). Općenito za kvalitetu rada suvremene škole od iznimne je važnosti interakcija nastavnik-učenik te sam stil rada nastavnika što su pokazali rezultati navedenih istraživanja. Kvaliteta interakcije u razredu u tim istraživanjima dovodi se u vezu s ishodima učenja (Huitt, 2003), akademskim uspjehom (Klarin i sur., 2003, prema Opić, 2016), razvojem učeničke kreativnosti (Juul i Jensen, 2010, prema Opić, 2016), temperamentom i samopoštovanjem učenika (Šimić Šašić i sur., 2021). Međutim, nastavnici i učenici različito procjenjuju kvalitetu svojih interpersonalnih odnosa. Učeničke procjene su niže, a nastavničke više, međutim razvidno je kako interakcija nastavnik-učenik ostavlja trajni trag na razvoj učenika (Opić, 2016).

Učenička samoučinkovitost

Učenička (akademska) samoučinkovitost konstrukt je koji govori o uvjerenjima pojedinca o vlastitim postignućima u određenim akademskim zadatcima, a definira se kao individualna samoučinkovitost formirana u akademskom okružju (Bong i

Skaalvik, 2003). Razvija se od djetinjstva i nije nasljedna osobina (Maddux, 2002), već se temelji na vlastitom i posrednom iskustvu, verbalnom uvjeravanju i psihofizičkom stanju (Milanović Dobrota i Radić Šestić, 2012).

U središtu teorije samoučinkovitosti jest očekivanje osobne učinkovitosti u situacijama kada treba pokretati akcije. Prema Bandurinoj socijalno-kognitivnoj teoriji, vjerovanja koja ljudi imaju o sebi ključni su element u izvršavanju kontrole i osobnom djelovanju. Osoba koja dobro izvršava postavljeni zadatak imat će više vjere u svoje sposobnosti i bit će motiviranija za rad. Ako osoba doživi neuspjeh, tada će i njezina samoučinkovitost biti smanjena (Bandura, 1977, 1989).

Krajem dvadesetoga stoljeća samoučinkovitost se sve više istražuje u akademskim uvjetima, a najčešće se povezuje s konstruktima motivacije i samoregulacije učenja (Ivanov i Penezić, 2001). Istraživanja pokazuju kako je samoučinkovitost (ili samodjelotvornost) važan čimbenik objašnjenja i predviđanja akademske uspješnosti, povezana je s izborom karijere te prediktor uspjeha i ustrajnosti u akademskim uvjetima (Multon i sur., 1991). Pojedinci s većim osjećajem samoučinkovitosti ustrajniji su te se koriste većim brojem adaptivnih strategija učenja u vlastitoj izvedbi zadatka (Pintrich i Garcia, 1991) te je ona povezana s kritičkim mišljenjem, metakognicijom, ponavljanjem naučenoga, organizacijom, razradom, traženjem pomoći i vršnjačkim učenjem (Nielsen, 2004), a pozitivan je prediktor i učeničke poduzetnosti (Luketić, 2016). Studenti s visokom razinom samoučinkovitosti adaptivno su uključeni u samoregulaciju učenja i koriste strategije učenja koje podupiru dubinsku razinu učenja (Prat-Sala i Redford, 2010). Ciljna orijentacija na znanje i ciljna orijentacija na izvedbu kao motivacijske strategije samoregulacije učenja povezane su sa samoučinkovitošću (Rupčić i Kolić-Vehovec, 2004). Prema nekim istraživanjima, samoučinkovitost ovisi i o dobi učenika. Primjerice Koludrović i Radnić (2013) pokazuju da mlađi učenici procjenjuju svoju samoučinkovitost višom te su zadovoljniji razredno-nastavnim ozračjem u odnosu na starije učenike.

Metodologija

Cilj ovoga istraživanja bio je ispitati obilježja i prediktorsku ulogu konstruktivističkoga učenja, nastavničke interakcije osjećaja samoučinkovitosti u objašnjenju učeničke dosade kao kriterija.

Sudionici istraživanja

U teritorijalnom klaster-uzorku istraživanja sudjelovali su učenici sedmih i osmih razreda osnovne škole (ISCED razina 2, završni razredi nižega sekundarnog obrazovanja) iz svih pet regija Republike Hrvatske ($N = 1249$). Istraživanje je provedeno od listopada do studenoga 2021. g. (Rudić, 2022). Sudionici su popunjavali upitnik u formi papir-olovka. Od roditelja ili staratelja učenika dobivena je suglasnost za sudjelovanje njihove djece u istraživanju, a prije toga dobivena je i suglasnost škola te odobrenje nadležnoga etičkog povjerenstva. Popunjavanje upitnika bilo je u anonimno i dobrovoljno, a

sudionici istraživanja mogli su u svakom trenutku odustati od istraživanja. U uzorku sudionika istraživanja je bilo 554 dječaka (44,4 %) i 693 djevojčice (55,5 %); njih 603 (48,3 %) polazilo je sedmi razred, a 646 (51,7 %) osmi razred. 431 (34,5 %) sudionika istraživanja živi u seoskim sredinama, a 818 (65,5 %) sudionika istraživanja živi u gradskim sredinama.

Instrumenti

Podatci su prikupljeni anketnim upitnikom koji je sadržavao pitanja o demografskim obilježjima sudionika (razred, spol, završni školski uspjeh i prebivalište) te odgovarajućim preuzetim skalama korištenim uz suglasnost njihovih autora. Podatci o učeničkoj samoučinkovitosti prikupljeni su Upitnikom samoefikasnosti za djecu (engl. *Self-Efficacy Questionnaire for Children – SEQ-C*) (Muris, 2001), podatci o konstruktivističkom učenju Upitnikom konstruktivističkoga učenja (engl. *Constructivist Learning Environment Survey – CLES*) (Taylor, Fraser i Fischer, 1997), podatci o dosadi na nastavi Skalom dosade na nastavi – SDN (Trogrlić i Sorić, 2014), a o nastavničkoj interakciji Upitnikom nastavničke interakcije (engl. *Questionnaire on Teacher Interaction – QTI*) (Wubbels, Créton, Levy i Hooymayers, 1993) s hrvatskim prijevodom (Vulić-Prtorić i Sorić, 2007).

Skala dosade na nastavi

Jednodimenzionalni instrument Skala dosade na nastavi (Trogrlić i Sorić, 2014) sastoji se od 26 manifestnih tvrdnji petostupanjske Likertove skale (od 1 – *uopće se ne slažem* do 5 - *u potpunosti se slažem*). Skala mjeri učeničku samoprocjenu dosade tijekom cjelokupne nastave. Zbrajanjem vrijednosti svih tvrdnji dobiva se teorijska ukupna vrijednost na skali (od 26 do 130), tako da veći rezultat ukazuje na veću dosadnu. Skala je već prije validirana na uzorku hrvatskih sudionika sa zadovoljavajućim metrijskim karakteristikama (Trogrlić i Sorić, 2014).

Eksploratornom faktorskom analizom (*KMO* = 0,965; Bartlettov test sferičnosti bio je značajan $\chi^2 = 14440{,}24$; $df = 325$, $p < 0{,}01$) i zasićenjima tvrdnji većim od 0,30 te karakterističnim korijenom većim od 1, dobivena su četiri faktora koja objašnjavaju 54,57 % ukupne varijance. Budući da većina čestica ima zasićenje u jednom faktoru, konfirmatornom FA s ograničenjem na jedan faktor pokazalo se da objašnjava 40,93 % varijance te je potvrđena jednodimenzionalna faktorska struktura skale (Tablica 1). Unutarnja pouzdanost skale je zadovoljavajuća ($\alpha = 0{,}93$).

Upitnik konstruktivističkoga učenja

Upitnik konstruktivističkoga učenja (engl. *Constructivist Learning Environment Survey - CLES*) (Taylor, Fraser i Fischer, 1997) sadrži 35 tvrdnji petostupanjske Likertove ljestvice (od 1 – *nikad* do 5 – *gotovo uvijek*) raspoređenih u pet faktora. Instrument je otprije validiran na uzorcima hrvatskih sudionika (Bošnjak, 2009). Za potrebe ovoga istraživanja pojedine čestice su neznatno modificirane kako bi odgovarale istraživačkim pitanjima ove studije. Faktor „Osobna važnost" učenja (engl. *Personal relevance*) usmjerena je na intrizičnu motivaciju učenja te zanimljivost i korisnost u životnim situacijama

onoga što uče. Faktor „Kritičko mišljenje" (engl. *Critical voice*) podrazumijeva kritički odnos učenika prema onome što uči, selekciji informacija i kritičkom stavu prema naučenome. Faktor „Kontrola" (engl. *Shared control*) usmjeren je na procjenu kontrole vlastitoga procesa učenja i sudjelovanja u nastavnim aktivnostima. U „Učeničkom pregovaranju" (engl. *Student negotiation*) učenici procjenjuju suradničke nastavne odnose i suradničko učenje, dok u faktoru „Nesigurnost učenja" (engl. *Uncertainty*) procjenjuju mogućnosti iskustva znanstvenih spoznaja u učenju (Tablica 1).

Šest tvrdnji je konvertirano iz negativnoga u pozitivno usmjerenje, dok se zbrajanjem vrijednosti tvrdnji dobiva rezultat u svakom faktoru te veći rezultat ukazuje na veću razinu konstruktivističkoga učenja. Prema modelu zajedničkih faktora i Varimax rotacijom provedena je eksploratorna FA (*KMO* = 0,83; Bartletov test sferičnosti je bio značajan χ^2 = 10765,15; *df* = 595; $p < 0{,}001$). Sa zadanim zasićenjima većim od 0,30 i korijenom većim od 1 dobiveno je 7 latentnih faktora koji ukupno objašnjavaju 36,69 % varijance. Jedan faktor sadrži dvije čestice male zasićenosti, dok jedan faktor sadrži tri čestice koje imaju zasićenja na nekim od ostalih pet faktora. Šest čestica izbačeno je iz daljnje analize jer nisu imale odgovarajuća zasićenja.

Konfirmatornom FA s 5 faktora objašnjeno je 37,104 % varijance s 29 čestica. Nakon ove analize dvije čestice su izbačene iz daljnje analize jer nisu imale zadovoljavajuća zasićenja. Faktorska struktura skale s 27 tvrdnji objašnjava 38,90 % varijance, iako je konačna faktorska struktura sadržavala 26 tvrdnji zbog unutarnje pouzdanosti jednoga faktora. Faktori su pokazali zadovoljavajuće unutarnje pouzdanosti („Osobna važnost" $\alpha = 0{,}79$, za „Kritičko mišljenje" $\alpha = 0{,}68$, „Kontrola učenja" $\alpha = 0{,}62$, „Učeničko pregovaranje" $\alpha = 0{,}80$). Faktor „Nesigurnost učenja" pokazao je niži $\alpha = 0{,}56$, pa je dodatnim pregledom ukazano da se izbacivanjem jedne tvrdnje dobiva bolja pouzdanost faktora ($\alpha = 0{,}72$). Stoga je ta tvrdnja izbačena iz daljnje analize te se ponovljenom FA pokazalo kako 26 tvrdnji objašnjava 39,57 % ukupne varijance.

Upitnik nastavničke interakcije

Upitnik nastavničke interakcije (engl. *Questionnaire on Teacher Interaction – QTI*) (Wubbels i sur., 1993) sadrži 48 tvrdnji petostupanjske Likertove ljestvice (od 1 – *nikad* do 5 – *uvijek*) koje formiraju osam faktora. Skala je otprije validirana na uzorku hrvatskih sudionika (Šimić Šašić, 2012) s optimalnim metrijskim obilježjima. Faktor „Nesigurnost" (engl. *Teacher Uncertainty*) usmjeren je na učeničku procjenu nesigurnoga i pritajenoga ponašanja nastavnika. Podskala „Nezadovoljstvo" (engl. *Dissatisfaction*) usmjerena je na nastavnikovo organiziranje tišine u razredu te kritiziranje i iskazivanje nezadovoljstva. Faktorom „Opominjanje" (engl. *Admonishing*) procjenjuje se nastavnikova ljutnja i kažnjavanje učenika. Nadalje, faktor „Strogost" (engl. *Strictness*) usmjeren je na razinu organizacije discipline i uspostavljanje pravila u razredu. Faktorom „Vodstvo" (engl. *Leadership*) mjeri se organiziranost i regulacija strukture razreda. Faktor „Pomaganje/Prijateljstvo" (engl. *Helpfulness/Friendliness*) odnosi se na izražavanje interesa, pomoć učenicima i nastavnikov smisao za humor.

Faktor „Razumijevanje“ (engl. *Understanding*) usmjeren je na mjerenje nastavnikove empatije, strpljivosti i otvorenosti prema učenicima. Na kraju, podskala „Odgovornost/davanje slobode učenicima“ (engl. *Student responsibility/freedom*) usmjerena je na pružanje mogućnosti samostalnoga rada učenicima te osjećaj slobode i odgovornosti. Rezultat pojedinoga faktora na svakoj podskali dobiva se zbrajanjem vrijednosti pojedinih tvrdnji. Provedena je eksploratorna FA glavnih komponenata s Varimax rotacijom (*KMO* = 0,97, Batlettov test sfericiteta je bio značajan χ^2 = 24116,09; *df* = 1128; $p < 0,001$) sa zasićenjima većim od 0,30 te korijenom većim od 1. Pokazala se osmofaktorska struktura koja objašnjava 53,87 % ukupne varijance. Dva faktora imala su po dvije čestice, a jedna čestica iz svakog od tih faktora je imala zasićenja i na drugim faktorima. Jedan faktor je imao šest tvrdnji, ali njih pet je imalo veća zasićenja na drugim faktorima. Karakteristični korijeni triju faktora pokazuju vrijednosti blizu jedan (1,30; 1,27; 1,24) što ukazuje o mogućnosti izbacivanja tih triju faktora. Stoga je provedena konfirmatorna faktorska analiza s 5 faktora koji objašnjavaju 47,38 % ukupne varijance. Od pet faktora jedan sadrži četiri tvrdnje malih zasićenja koje su ujedno imale veća zasićenja na drugim faktorima. Karakteristični korijen toga faktora je niski (1,30). Nadalje, jedna tvrdnja nije imala prikladno zasićenje ni u jednom faktoru, dok je jedna imala malo zasićenje (0,30) i niski komunilaitet (0,21). Zato su te dvije čestice izbačene iz daljnje analize. Finalnu faktorsku strukturu upitnika čine četiri faktora s 46,15 % objašnjene ukupne varijance na 46 čestica. Struktura donekle odgovara originalnoj. U tom pogledu, prvi faktor čine podskale „Vodstvo“ i „Razumijevanje“ te dvije čestice iz „Pomaganja/Prijateljstva“ (čestice koje se odnose na pomaganje). Stoga je ovaj faktor nazvan „Vodstvo/Razumijevanje/Pomaganje“. Drugi faktor čine čestice triju podskala, a to su „Opominjanje“, „Strogost“ i „Nezadovoljstvo“, bez jedne čestice koja je pridružena prvom faktoru. Ova je podskala nazvana „Opominjanje/Strogost/Nezadovoljstvo“. Treći faktor čini podskala „Nesigurnost“ koja je ostala samostalna, bez jedne koja je pridružena četvrtom faktoru. Četvrti faktor sadrži podskalu „Davanje slobode učenicima“ te čestice iz „Pomaganja/Prijateljstva“ (čestice koje se odnose na prijateljstvo). Stoga je podskala nazvana „Prijateljstvo/Davanje slobode“. Svi faktori imaju optimalne unutarnje pouzdanosti (Tablica 1).

Upitnik samoučinkovitosti za djecu

Upitnik samoučinkovitosti za djecu (engl. *Self-Efficacy Questionnaire for Children – SEQ-C*) (Muris, 2001) mjeri dječji osjećaj samoučinkovitosti u tri domene - emocionalnoj, socijalnoj i akademskoj. Upitnik je otprije validiran na uzorku hrvatskih učenika sa zadovoljavajućim mjernim karakteristikama (Bubić i Goreta, 2015). Upitnik sadrži 24 tvrdnje koje formiraju tri faktora samoučinkovitosti (svaka po 8 tvrdnji) petostupanjske Likertove skale (1 – uopće ne do 5 – u potpunosti da). Faktor „Socijalna samoučinkovitost“ (engl. *Social self-efficacy*) usmjeren je na percepciju sposobnosti komunikacije s vršnjacima i asertivnost. Faktor „Akademska samoučinkovitost“ (engl. *Academic self-efficacy*) usmjeren je na percepciju snalaženja u učenju i nastavnom

sadržaju te na izvršavanje školskih aspiracija. Faktor „Emocionalna samoučinkovitost" (engl. *Emotional self-efficacy*) mjeri percepciju sposobnosti suočavanja s negativnim emocijama. U ovome istraživanju korišten je postojeći prijevod na hrvatski jezik (Vulić-Prtorić i Sorić, 2007).

Tablica 1

Provedena je eksplorativna FA glavnih komponenata s Varimax rotacijom te sa zasićenjima većim od 0,30 i karakterističnim korijenom većim od 1 (*KMO* = 0,91, Bartlettov test sfericiteta je značajan $\chi^2 = 8258{,}50$; $df = 276$; $p < ,001$) te je dobiveno 5 faktora koji objašnjavaju 51,92 % ukupne varijance. Budući da karakteristični korijeni ukazuju na tri faktora, ponovljena je konfirmatorna FA za tri zadana faktora koja objašnjavaju 42,82 % ukupne varijance. Tako dobivena faktorska struktura identična je originalnoj strukturi dobivenoj u hrvatskoj validaciji upitnika (Vulić-Prtorić i Sorić, 2007), osim jedne čestice. U originalu se ta čestica nalazi u faktoru „Akademske samoučinkovitosti", ali ovdje nije imala primjereno zasićenje. U faktoru „Socijalne samoučinkovitosti" imala je zadovoljavajuće zasićenje (0,34) pa je zato uvrštena u faktor „Socijalne samoučinkovitosti". Pouzdanost skale bila je primjerena te je za cijelu skalu od 24 čestice iznosila $\alpha = 0{,}88$, kao i za pojedine faktore (Tablica 1).

Rezultati

Pokazalo se da su korelacije među faktorima zadovoljavajuće te prikladne za provedbu hijerarhijske regresijske analize (Tablica 2). Kao prediktori nisu uzeti u obzir „Kontrola učenja" jer nije imala značajnu povezanost s „Dosadom na nastavi" te Ukupna samoučinkovitost koja nije uvrštena u model jer je imala visoki koeficijent korelacije (> 0,8) s ostalim podskalama samoučinkovitosti. U prvom koraku hijerarhijske regresijske analize su uvršteni demografski čimbenici, zatim u drugom koraku varijable konstruktivističkoga učenja, potom u trećem koraku varijable nastavničke interakcije te u zadnjem koraku varijable samoučinkovitosti. Razlog ovakvom poretku uvrštavanja seta varijabli u hijerarhijsku regresijsku analizu jest što su demografska obilježja relativno nepromjenjiva, konstruktivističko učenje ovisi o nastavnikovom poučavanju koje traži višu razinu interakcije, a samoučinkovitost može ovisiti o prethodnim varijablama.

Tablica 2

Pokazalo se kako demografska obilježja učenika nisu značajni prediktori dosade na nastavi $F(4, 661) = 2{,}33$, $p = 0{,}06$. Varijable dodane u drugom koraku statistički značajno doprinose regresijskom modelu $F(8, 657) = 109{,}51$, $p < 0{,}001$ te objašnjavaju 57,1 % varijance. U trećem koraku uvrštene su varijable nastavničke interakcije te je time objašnjeno dodatnih 4,2 % varijance. Ovakav novi model pokazuje kako su prediktorske varijable značajne u predikciji dosade na nastavi $F(12, 653) = 86{,}39$, $p < 0{,}001$ (Tablica 3).

Tablica 3.

Uvođenjem varijabli samoučinkovitosti u četvrtom koraku HRA-a objašnjeno je dodatnih 2,1 % varijance te se i ovaj model pokazao značajnim u predikciji „Dosade na nastavi" $F(15, 650) = 75{,}22$, $p < 0{,}001$. U završnom, četvrtom koraku HRA-a, demografske varijable (spol, prebivalište (seoska sredina/gradska sredina), razred, uspjeh učenika) i varijable „Kritičko mišljenje", „Učeničko pregovaranje", „Vodstvo/Razumijevanje/Pomaganje" i nesigurnost nisu statistički značajni prediktori „Dosade na nastavi". Odnosno, sedam prediktora statistički je značajno u objašnjenju varijance „Dosade na nastavi". Ti prediktori su „Osobna važnost učenja" ($\beta = -0{,}28$, $p < 0{,}01$), „Nesigurnost učenja" ($\beta = -0{,}39$, $p < 0{,}01$), „Prijateljstvo/Davanje slobode" ($\beta = 0{,}10$, $p < 0{,}01$), „Opominjanje/Strogost/Nezadovoljstvo" ($\beta = 0{,}18$, $p < 0{,}01$), „Socijalna samoučinkovitost" ($\beta = 0{,}07$, $p < 0{,}05$), Akademska samoučinkovitost ($\beta = -0{,}17$, $p < 0{,}01$), Emocionalna samoučinkovitost ($\beta = -0{,}06$, $p < 0{,}01$). Završni model objašnjava 63,4 % varijance. S obzirom na smjerove regresijskih koeficijenata može se zaključiti kako učenici koji percipiraju manju osobnu važnost i manje mogućnosti za znanstvenu spoznaju, istodobno percipiraju više razine prijateljstva nastavnika i njihovo davanje slobode u nastavi te veću razinu strogosti i opominjanja, kao i oni koji sebe vide manje akademski i emocionalno učinkovitima, a više socijalno učinkovitima, doživljavaju veću dosadu na nastavi (Tablica 3).

Diskusija

Kod utvrđivanja doprinosa konstruktivističkoga učenja, nastavničke interakcije i samoučninkovitosti u učeničkoj dosadi na nastavi, izračunati su Pearsonovi koeficijenti korelacije i provedena je hijerarhijska regresijska analiza. Rezultati su pokazali kako sudionici istraživanja koji percipiraju veću osobnu važnost, kritičko mišljenje, učeničko pregovaranje i nesigurnost učenja prijavljuju nižu dosadu na nastavi, kao i sudionici koji kod nastavnika percipiraju veće vodstvo/razumijevanje/pomaganje, veće prijateljstvo/davanje slobode i manje opominjanje/strogost/nezadovoljstvo te nižu nesigurnost. Podskale samoučinkovitosti (socijalna, akademska i emocionalna), kako i ukupni rezultat na Upitniku samoučinkovitosti, pokazuju kako sudionici koji percipiraju veću samoučinkovitost, percipiraju i nižu dosadu na nastavi.

Rezultati Pearsonovih koeficijenata korelacije pokazali su kako će sudionici s većom intrizičnom motivacijom doživjeti nižu dosadu na nastavi, što potvrđuju i rezultati HRA-a. Razvidno je kako se neki rezultati dobiveni analizom Pearsonovih i regresijskih koeficijenata međusobno razlikuju. Pearsonovi koeficijenti korelacija pokazali su kako veća procjena opsega u kojemu su učeniku pružene mogućnosti za iskustvo znanstvenih spoznaja rezultira nižom dosadom, dok rezultati hijerarhijske analize rezultiraju većom dosadom. Pearsonovi koeficijenti pokazali su kako sudionici doživljavaju nižu dosadu ako se nastavnici odnose prijateljski prema njima i ako im daju prilike za samostalan rad te osjećaj slobode i odgovornosti, međutim rezultati HRA-a pokazali su suprotno. Navedeni rezultati pokazuju kako suviše slobode, prekomjerne učeničke samostalne aktivnosti bez nastavničkoga vodstva i nepostavljanje granica,

učenicima dugoročno izaziva intenzivniji osjećaj dosade na nastavi. HRA pokazuje da veća socijalna samoučinkovitost rezultira značajnijom dosadom, iako veći osjećaj samoučinkovitosti rezultira nižom dosadom.

Sve su varijable međusobno pozitivno povezane, osim podskala „Opominjanje/Strogost/Nezadovoljstvo" i nesigurnost koje su negativno povezane s ostalim varijablama dok su one međusobno pozitivno povezane. Kod HRA kao prediktorska varijabla nije u obzir uzeta „Kontrola učenja" jer nije pokazala značajnu povezanost s „Dosadom na nastavi", dok „Ukupna samoučinkovitost" nije uvrštena u model zbog visokih koeficijenata korelacije s ostalim podskalama samoučinovitosti. Kao kontrolna varijabla u prvom koraku uvršten je spol sudionika, zatim u drugom koraku varijable konstruktivističkoga učenja, u trećem koraku varijable koje se odnose na nastavničku interakciju i na kraju u četvrtom koraku varijable koje se odnose na samoučinkovitost. Spol se nije pokazao značajnim prediktorom, iako se pretpostavljalo kako će biti značajan s obzirom na rezultate ranijih istraživanja koji su pokazali kako su djevojčice više orijentirane na učenje, a dječaci su više orijentirani na izbjegavanje truda (Stanišak Pilatuš, Jurčec i Rijavec, 2013). Varijable konstruktivističkoga učenja koje su dodane u drugom koraku značajno doprinose regresijskom modelu i objašnjavaju 56,7 % varijance. Dodatnih 4 % varijance objašnjeno je uvođenjem varijabli nastavničke interakcije u trećem koraku, a dodatnih 2, 5 % varijance objašnjeno je uvođenjem varijabli samoučinkovitosti. Konačni model objašnjava 63,3 % varijance te s obzirom na smjerove regresijskih koeficijenata zaključujemo kako sudionici koji percipiraju manju osobnu važnost i manje mogućnosti za znanstvenu spoznaju, veće prijateljstvo, višu razinu slobode koju im daju nastavnici te veću razinu strogosti i opominjanja, a sebe vide manje emocionalno i akademski učinkovitima te više socijalno učinkovitima, doživljavaju veću dosadu na nastavi.

Ranija istraživanja pokazala su kako su nastavnička interakcija i tip interpersonalnoga odnosa koji nastavnik razvije s učenicima u razredu povezani s učeničkim postignućem i motivacijom, a vodstvo, prijateljstvo i razumijevanje nastavnika unaprjeđuju učeničko postignuće (Fraser, Aldridge i Soerjaningsih, 2010).

Iz dobivenih rezultata vidljivo je kako su konstruktivističko učenje, nastavnička interakcija i samoučinkovitost značajni prediktori dosade na nastavi.

Zaključak

U skladu s ciljem provedenoga istraživanja, dobivenih rezultata te njihovom komparacijom s rezultatima dosadašnjih istraživanja u okviru ove teme, kao i verifikacijom prema dosadašnjim teorijama nastave i škole moguće je ponuditi nekoliko zaključaka. Prvenstveno, konstruktivističko učenje, nastavnička interakcija i samoučinkovitost statistički su značajni prediktori učeničke dosade na nastavi. Razvidno je kako će dosada na nastavi biti niža ako je učenicima zanimljivo ono što uče, ali da suviše slobode, nepostavljanja granica, previše samostalne aktivnosti učenika za reperkusiju mogu imati znatniju pojavu dosade na nastavi. Općenito, bolja samoučinkovitost, kritičko

mišljenje i propitivanje onoga što učenici uče pridonose nižoj dosadi, dok pozitivniji odnosi s drugima i zauzimanje za sebe pridonose većoj dosadi na nastavi.

Na kraju valja ukazati na nekoliko nedostataka istraživanja. Naime, istraživanje je kvantitativnoga metodološkog pristupa pa izostaje epistemološko razumijevanje istraživane problematike. Na temelju faktorskih analiza brisanjem pojedinih čestica urađene su promjene u strukturi upitnika što može imati za posljedicu upitnost sadržajne valjanosti korištenih instrumenata prikupljanja podataka. Isto tako, nacrt istraživanja je korelacijski, pa nije moguće utvrditi uzročno-posljedične odnose istraživanih koncepata. Nadalje, moguća je pojava i davanja društveno poželjnih odgovora. U konačnici, istraživanje je provedeno s učenicima sedmih i osmih razreda osnovne škole, dok bi za obuhvatnije rezultate i spoznaje valjalo ispitivanje proširiti na sve razrede osnovne škole te na učenike srednjoškolskoga obrazovanja. Navedeni nedostatci ujedno su preporuka za daljnja istraživanja u okviru ove teme.