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A STUDY ON THE RELATION BETWEEN LEARNING STYLES AND STUDENTS' ACADEMIC ENGAGEMENT

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Abstract

Educational policies and practices pertaining to initial professional formation focus upon the implementation of the student-centered concept. New tendencies regarding quality assurance of educational programs recommend that curricula should contain the most efficient teaching methods, in order to contribute to the formation of students' professional competences. Specialty literature studies claim that the efficiency and performance of these competences depend largely not only on the course design but also on the learning style as well as on the student's level of engagement in his/her own learning activity. Students' academic engagement represents an umbrella term which implies students' active engagement in the learning activities offered by the training programs. Academic engagement is often linked with good learning outcomes, such university persistence, high level of test achievement etc. The present study proposes to identify the level of academic engagement, the modality of self-regulated learning, as well as the type of relation established between the two constructs with the students of two specializations (technical and social studies). The measuring of constructs is achieved through applying the Inventory of Learning Styles and Utrecht Work Engagement Scale. We expect significant differences between the two groups of students in the level of academic engagement and in the modality of self-regulated learning. The implications on the practical educational level of the study refer to the fact that the instructional system should be designed to support the academic engagement and to stimulate the identification of other learning modalities.

1. Introduction

Specialty literature presents numerous proposals of theorists (learning models) which would guide teachers in projecting the instructional design with a view to initiate, activate and support students' learning in order to facilitate the forming of competences specific to the chosen study domain. One of the directions of high education educational policies refers to student-centered learning, to the development of certain strategies to involve students to play an active role in their own learning, to learn how to learn, to become autonomous and independent as learners. Many universities take clear and systematic measures with a view to allocate resources efficiently and to help students with their own learning, to facilitate success, all these being indicators of university practice quality (Kuh, 2009). Students' engagement in learning represents an indicator of university retention and of graduation rate (Tinto, 1993).

It has been known that we are different not only in the way we behave, think and feel but also in the modality to learn. Honey and Mumford (1986) considers that not only students learn differently but also, they process information and represent knowledge in different ways that they prefer to use distinct types of educational resources. Interpreting the individual differences in learning (learning ability, learning style and learning goals, background knowledge) in the educational process not only contributes to obtaining learning performances but also to obtaining satisfaction and well-being which represents determinant factors of learning engagement and motivation.

2. Problem Statement

It has been known that students' engagement in their own learning activity represents an indicator of academic success (Hu, 2011), of improving academic satisfaction and motivation (Appleton, Christenson, & Furlong, 2008). Students'engagement is a concept studied as early as 1990 and has been associated with students' learning and personal development (Casuso-Holgado et al., 2013).

Academic engagement represents a multidimensional, complex phenomenon with substantial variations of terms and definitions: school engagement (Fredricks, Blumenfeld, & Paris, 2004), student engagement (Handelsman, Briggs, Sullivan, & Towler, 2005; Kuh, 2003), educational engagement (Wehlage et. al, 1989), study engagement (Schaufeli, Salanova, González-Romá, & Bakker, 2002).

Analyzing the subject student learning engagement, specialty literature studies are mostly centered rather on the learning environment, namely upon those learning opportunities present in the academic environment (Vekkaila, 2014), but also upon the activities offered by universities (McCormick, Kinzie, & Gonyea, 2013), ex. teachers (Anderson, Christenson, Sinclair, & Lehr, 2004) and peers (Buhs & Ladd, 2001), while others are centered on students' personal characteristics which influence their engagement in learning, for example self-efficacy (Caraway, Tucker, Reinke, & Hall, 2003), family background (Marks, 2000). Two approaches of academic engagement concept can be distinguished: "one emphasizes the degree of willing student compliance with organizational and subject rules, values and processes, and the other focuses on students' active participation and emotional commitment to their learning" (Casuso-Holgado et al., 2013).

The specialty literature lays more and more emphasis on explaining performance and progress in learning from the perspective of academic engagement, presenting different models of academic engagement. Most approaches consider academic engagement as being a multidimensional construct, made

up of three interdependent components (behavioural, cognitive and emotional) whose compound effect reflects students 'positive approach of learning (Li & Lerner, 2011; Appleton et al., 2008; Fredricks et. al., 2004; Schaufeli et al., 2002). Behavioural engagement consists of students' active engagement in learning and academic tasks, including behaviours such as effort, persistency and focus, asking for questions and contributions to class discussions; affective engagement refers to indicators such as the presence of interest and happiness and the lack of boredom, anxiety, and sadness, and cognitive engagement refers to investment in learning, and involves aspects such as willingness and thoughtfulness to expand the effort required to understand and master difficult tasks, the use of appropriate learning strategies, challenge preference, and self-regulation. Reeve & Tseng, 2011 add to the previously mentioned model a fourth dimension – agentic engagement which implies that students play an active role in student learning based on their motivation and how the environment supports and nourishes that motivation. (Reeve & Tseng, 2011). The learning activity engagement model proposed by Schaufeli and collaborators (2002) consider that learning experience is characterized by absorption (is defined as students 'sense of being deeply engrossed and fully concentrated in their studies), vigor (refers to students' sense of high levels of mental resilience and energy while studying, their willingness to exert and invest effort into their academic-related activities, their persistence in the face of obstacles, and their positive approach to learning) and dedication (is characterised by students' sense of enthusiasm, inspiration, significance, challenge, and pride for engaging in their studies, as well as their perception of school-related activities as meaningful) (Alrashidi, Phan, & Ngu, 2016). The model proposed by Schaufeli et al., (2002) describe students' psychological engagement rather than their behaviour in the school environment, but at the same time it offers new information about the motivational approach of engagement (Alrashidi, et. al., 2016; Phan & Ngu, 2014).

The research in the field concentrated upon the indicators of academic engagement: a high level of quality in learning is associated with effort mobilization, persistency in task achieving, interest and motivation to comply with academic tasks. It turns out that there is a relation between students' engagement in the learning activity and the learning strategies. Considering that motivation is the most important condition of learning (Kadivar, 2003) and that it can be explained through some aspects of activity engagement (vigor, dedication and absorption), we have proposed to investigate the efficacy of strategies to increase students' motivation. One of these strategies can be self-regulation learning (Hedeshi, 2017), this being considered a factor that explains academic engagement (McClelland & Morrison, 2003; Pintrich & Groot, 1990). Self-regulated learning is a multidimensional construct that emphasizes the active role of the learner (Zimmerman, 2008). The general view upon self-regulated learning refers to the fact that through it, learners construct their knowledge actively and use various cognitive and metacognitive strategies to control and to regulate academic learning. A student who has self-regulation capacities in learning is aware of the requirements of the tasks to be achieved and also of his own needs in order to develop the learning activity to a considerable extent. Students control the learning process through planning, organization, monitoring and constant evaluation, settle learning standards and objectives which help them to decide if their learning process has to continue likewise or if he has to change the learning modality. The specialty literature is not very generous in explaining the modality in which students perceive their engagement strategies in the learning activities (Ulmanen, Soini, Pyhältö, & Pietarinen, 2014).

In our study we shall refer to the learning model of Vermunt (1996), which approaches learning style as learning orientation and as a learning model specific for the learner. The style is represented by the result

of the interrelations between personal and contextual influences, without being a stable personality trait (Negovan, 2010). Vermunt differentiates four learning styles, each of them having distinct characteristics according to the following criteria: the manner of processing the learning content, learning orientation, affective processes activated during study, mental models and the manner of regulation learning. The four learning styles conceptualized by Vermunt approached only from the perspective of the component related to the learning regulation strategy (the manner of planning and monitoring learning), are: persons with a learning style directed on significance (ask themselves questions, diagnose and correct their understanding problems), persons with a learning style directed on application (they test understanding, especially of abstract concepts), persons directed on reproduction (they check their understanding periodically and they apply self-testing) and undirected persons (presents a low level of self-regulation) (Negovan, 2010).

3. Research Questions

The following research questions had been formulated:

- Are there any significant differences between the students from the two programs of studies (technical and social studies), respectively the level of study programs (master and bachelor) as regards academic engagement?

- Are there any significant differences between the students from the two study programs (technical and social studies), respectively the level of study programs (master and bachelor) in as regards regulation strategies used in learning?

- Are there significant associations between the components of academic engagement and regulation strategies in learning?

4. Purpose of the Study

The present study proposes to identify the level of academic engagement, the modality of self-regulated learning, as well as the type of relation established between the two constructs with the students of two specializations (technical and social studies) and at the level of study programs (bachelor and master).

5. Research Methods

5.1. Study design

This study used a correlational design to examine the associations among Romanian students and a descriptive design to examine the differences between students from the technical and social studies specializations.

5.2. Sample

The sample consisted of 128 Romanian university students: 35 boys and 93 girls, with an average age of 22.94 years (SD = 3.14), from technical (42 students) and social studies programs (86 students); 68 students from bachelor's degree and 60 students from master degree.

The questionnaires had been administered online, the participation being voluntary and unpaid.

### 5.3. Instruments

The following measures were used:

The Inventory of Learning Styles – ILS (Vermunt, 1996) comprises 20 subscales and 120 items relating to strategies, motives and mental models. Individuals respond to statements along a five-point scale according to the degree to which the statement is descriptive of their behaviour or the extent to which they agree with the statement. For our study we have used scales which circumscribe the criterion Regulation strategies with 28 items. Rehabilitation indices for the scale are Self-Regulation (11 items) α= .79, External regulation (11 items) α= .68, Lack of regulation (6 items)α= .72.

The Utrecht Learning Engagement Scale (Schaufeli & Baker, 2013) assesses students' academic engagement and it is composed of 17 items that assess: vigour (6 items, α = .89), absorption (6 items, α = .93) and dedication (5 items, α = .92), each item is assessed using a Likert scale that ranges between 0 (Never) and 6 (Every day). Cronbach's Alpha for the total scale is .96.

6. Findings

The data registered for the two groups of students (technical specialization and respectively social sciences specialization) point out the following (Figure 01):

- There are no significant differences between the two group of students as regards specializations at the level of academic engagement: general academic engagement $t(126)= 10.086$, $p \leq 0.000$ ($m_1= 49.03$, SD=22.11; m_2=59.11, SD=8.87), and for the dimensions dedication $t(126)= 1.571$, $p \leq 0,000$ ($m_1= 17.46$, SD=8.38; m_2=19.03, SD=3.27) and absorption $t(126)= 1.714$, $p \leq 0,000$ ($m_1= 13.97$, SD=9.07; m_2=15.69, SD=3.74). As concerns the dimension vigor significant differences have been registered between the two groups grupuri vigor $t(126) = 6.057$, $p \leq 0,000$ ($m_1= 18.34$, SD=7.30; m_2=24.40, SD=3.99); also, significant differences have been registered between the two groups of students as regards the level of studies both at the level of general academic engagement $t(126) = 11.500$, $p \leq 0,000$ ($m_1= 47.50$, SD=22.09; m_2=59.00, SD=13.51), and also at the level of all the dimensions of academic engagement: dedication $t(126) = 4.100$, $p \leq 0,000$ ($m_1= 15.90$, SD=7.03; m_2=20.00, SD=5.25) și absorption $t(126) = 3.375$, $p \leq 0,000$ ($m_1= 12.90$, SD=6.80; m_2=16.28, SD=6.77) and vigor $(126)= 4.850$, $p \leq 0,000$ (m_1=18.60, SD=7.69; m_2=23.45, SD=4.74). The covariance analysis ANCOVA allows us to calculate the combined effect of the level of studies (master or bachelor) and of the specialization type (technical or social) upon students' academic engagement, thus $F_{1,2}$=7,899, p=0,007, R square=0.300 (F1=13.149, p=0.001, partial eta square= .166; F_2=12.873, p=0.001, partial eta square= .163).
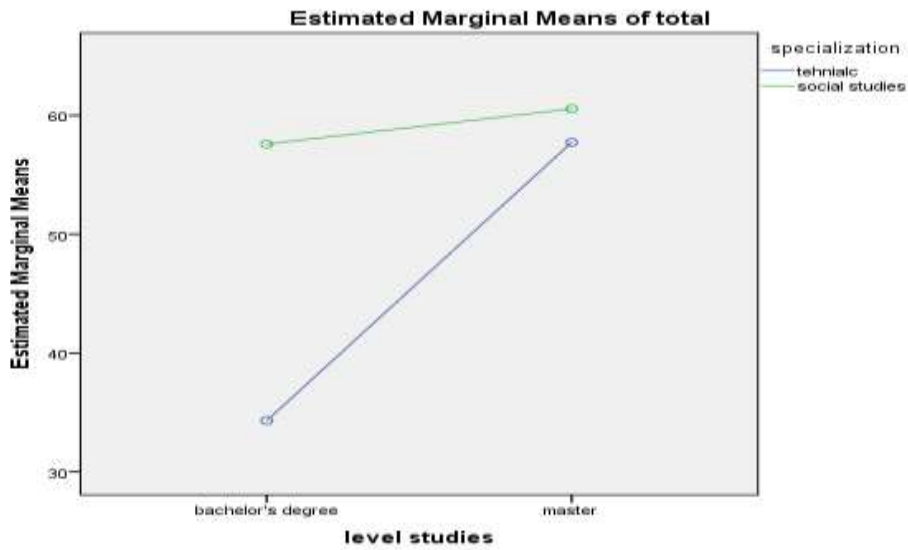
Figure 01. Representation of average scores for academic engagement according to the level of studies and specialization

In point of self-regulation strategies, we have determined the following (Figure 02):

There are significant differences as regards the level of studies (bachelor and master) between the two groups of students t (126) = 4.672, p≤0.000 (m_1= 64.27, SD=18.31; m_2=83.95, SD=16.76); equally, significant differences have been registered betweeen the two groups of students as regards the type of specialization (technical or social)t(126) = 2.861, p≤0.000 (m_1=47.50, SD=20.09; m_2=59.00, SD=13.51). The covariance analysis ANCOVA allows us to affirm that the differences related to regulation strategies in learning are explained by the combined effect of the specialization (technical and social studies) and of the level of studies (bachelor, respectively master), as it follows: $F_{1,2}$=8.731, p=0,004, R square=0.365 (F_1=23.619, p=0.000, partial eta square= .117; F_2=2.335, p=0.131, partial eta square= .034).]
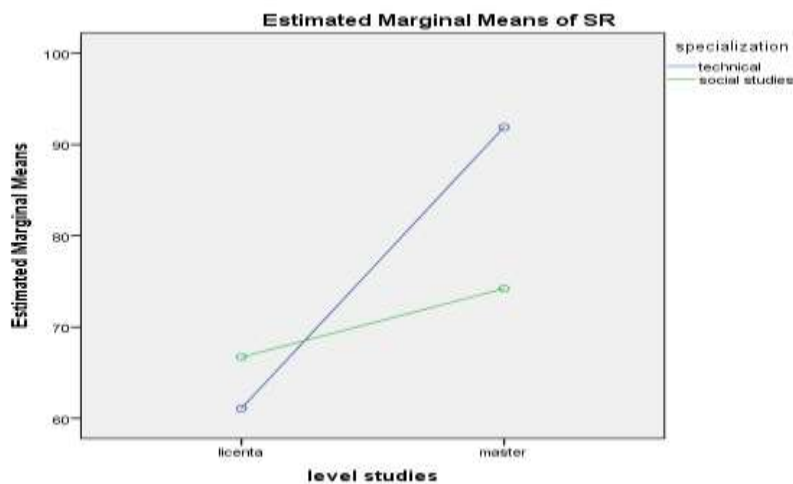
Figure 02. Representation for average scores of regulation strategies in learning according to the level of studies and specialization

In order to identify the modality in which regulation strategies of learning explain students' academic engagement, we have determined the following (Table 01):

Table 01. Pearson correlation coefficients between Regulation strategies of learning, Academic engagement and dimensions vigor, absorption and dedication

Variable	Vigor	Dedication	Absorption	Academic engagement
Regulation strategies of learning	0.535**	0.704**	0.625**	0.699**

N=126, ** $p< .01$]

The variable academic engagement, as well as its dimensions (vigor, absorption and dedication) correlates strongly with general strategies of learning, which allows us to verify if general strategies of learning can explain academic engagement (Tabel 02.). The linear regression analysis offers us the model through which we can explain that 48% from the variant of general regulation strategies of learning can explain academic engagement of students from technical and social sciences specializations.

Table 02. Model of Linear Regression –Regulation strategies of learning and academic engagement

Model	R	R^2	F	Sig	Standardized Coefficients Beta	Sig.
Predictor a: Regulation strategies of learning Dependent variable b: Academic engagement	0.699[a]	0.488	64.903	0.000[b]	0.699	0.000

6.1. Discussions

Although we have not identified a clear direction in the specialty literature which could contribute to the validation of the hypotheses built by us, we consider that the present study is a pilot study that offers us a starting point.

At the level of the analysed group, we have determined that the students from the technical; specialization have the tendency to be less engaged in academic tasks (m= 49.03, SD=22.11), but their engagement rate increases very much at the level of master studies (m_1=34.31, SD=23.76, m_2=57.73. SD=16.00). This side can be explained by the fact that academic tasks are more precise, more oriented towards practical and concrete aspects, which explains high the levels of enthusiasm, inspiration, task persistency, focus towards activities. At the same time, they registered a progress in the regulation strategies of learning (m_1=61.07, SD=4.49, m_2=91.909, SD=3.457), which can explain the significant increase of the academic engagement level, not only at the level of global score but also at the level of all its components. In the study of technical sciences, the initial formation period implies a vast theoretical foundation, which could contribute to a decrease in academic engagement, manifested through a feeling of incapacity in mobilizing the motivational forces with a view to obtain academic performances. On the other hand, the students from the social sciences specialization begin their activity with enthusiasm, pride and a feeling of joy for social activities (m_1=57.59, SD=8.887), but these do not register a spectacular progress as with the

students from technical specializations (m_2=60.56, SD=9.907). This phenomenon has been determined as concerns the regulations strategies of learning (m_1=66.71, SD=13.51, respectively m_2=74.22, SD=12.859).

As for the nature of the relations set between the studied variables, the specialty literature varies in argumentation. Some studies consider that academic engagement with all its dimensions (vigor, absorption, dedication) represents a predictor for the components of self-regulated learning. Our study confirms that 48 % from the variation of regulation strategies of learning explain students' academic engagement. Our opinion is that Self-regulation of Learning processes and results, External regulation of learning processes and results represents the psychological mechanisms which activate the motivational resources that lead to the mobilization of efforts, manifestation of enthusiasm and implication, developing academic engagement at the behavioural level. Academic engagement becomes a factor which through associations with personal variables contribute to obtaining academic performances and satisfaction in learning.

An important limit of the study refers to the fact that the analysis has not been carried out at the level of the dimensions of self-regulating strategies of learning. It is likely that this analysis would have indicated more accurately which of the components of self regulated learning contribute more to the explanation of students' academic engagement.

7.   Conclusion

The present study proposes to identify the level of academic engagement, the modality of self-regulated learning, as well as the type of relation established between the two constructs with the students of two specializations (technical and social studies) and at the level of the study programs (bachelor and master). Significant differences have been registered in point of regulation strategies of learning both at the level of study programs (bachelor and master), but also at the level of the type of specialization (technical sciences and social sciences). We have not registered significant differences between the groups of students as regards academic engagement towards the analysed criteria. Academic engagement is explained through the variation of the learning regulation strategies. New direction of research can be followed by identifying the weight of the learning regulation strategies types in explaining students' academic engagement. Information would be valuable not only through the validation of some explanatory models but mainly through developing didactic strategies teachers can use in the educational act. These should involve the mechanisms which can mobilize student's resources in order to approach academic tasks with implication and engagement, in order to create a prolific learning environment, interactive and exploring which would contribute not only to obtaining academic success but also to reaching well-being through the learning activity.

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References

Alrashidi, O., Phan, H. P., & Ngu, B. H. (2016). Academic Engagement: An Overview of Its Definitions, Dimensions, and Major Conceptualisations. *International Education Studies*, *9,* 41-52.

Anderson, A. R., Christenson, S. L., Sinclair, M. F., & Lehr, C.A. (2004). Check & connect: The importance of relationships for promoting engagement with school. *Journal of School Psychology*, *42*(2), 95–113.

Appleton, J., Christenson, S., & Furlong, M. (2008). Student engagement with school: critical conceptual and methodological issues of the construct. *Psychology in the Schools*, *45,* 369-386.

Buhs, E.S., & Ladd, G.W. (2001). Peer rejection as antecedent of young children's school adjustment: An examination of mediating processes. *Developmental Psychology*, *37*(4), 550–560.

Caraway, K., Tucker, C.M., Reinke, W.M., & Hall, C. (2003). Self-efficacy, goal-orientation, and fear of failure as predictors of school engagement in high school students. *Psychology in the Schools*, *40*(4), 417–427.

Casuso-Holgado, M. J., Cuesta-Vargas, A. I., Moreno-Morales, N., Labajos-Manzanares, M. T., Barón-López, F. J., Vega-Cuesta, M. (2013). The association between academic engagement and achievement in health sciences students. *BMC Medical Education*, *13*(33), 1-7.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School Engagement: Potential of the Concept, State of the Evidence. *Review of Educational Research*, *74*(1), 59-109.

Handelsman, M. M., Briggs, W. L., Sullivan, N., & Towler, A. (2005). A measure of college student course engagement. *The Journal of Educational Research*, *98*(3), 184-192.

Hedeshi, V. M. (2017). The Effect of Self-Regulatory Learning Strategies on Academic Engagement and Task Value. *World Family Medicine*, *10*, 242-247.

Honey, P., & Mumford, A. (1986). *Using our learning styles*. Berkshire: Peter Honey.

Hu, D. (2011). Reconsidering the relationship between student engagement and persistence in college. *Innovation in Higher Education*, *36*, 97-106.

Kavidar, P. (2003). The role of self-efficacy beliefs, self-regulation and intelligence in school performance among secondary school first grade students. *Journal of Education and Psychology*, 10(1-2), 45-58.

Kuh, G.D. (2009). What student affairs proffesionals need to know about student engagement. *Journal of College Student Development*, *50* (6), 683-706.

Kuh, G. D. (2003). What We're Learning About Student Engagement From NSSE: Benchmarks for Effective Educational Practices. *Change: The Magazine of Higher Learning*, *35*(2), 24-32.

Li, Y., & Lerner, R. M. (2011). Trajectories of school engagement during adolescence: Implications for grades, depression, delinquency, and substance use. *Developmental Psychology*, *47*(1), 233-247.

Marks, H.M. (2000). Student engagement in instructional activity: Patterns in the elementary, middle, and high school years. *American Educational Research Journal*, *37*(1), 153–184.

McClelland, M. M., & Morrison, F.J. (2003). The emergence of learning-related social skills in preschool children. *Early Childhood Research Quarterly*, *18*(2), 206–224.

McCormick, A. C., Kinzie, J. & Gonyea, R.M. (2013) Student Engagement: Bridging Research and Practice to Improve the Quality of Undergraduate Education. In: Paulsen, M.B., Ed., *Higher Education: Handbook of Theory and Research*, 28, Springer, Berlin, 47-92.

Negovan, V. (2010). *Psihologia învăţării. Forme, strategii şi stil* (ed. a II-a). [Learning psychology. Forms, strategies and style (2th ed.)]. Bucureşti: Editura Universitară.

Pintrich, P.R. & de Groot, E.V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, *82*(1), 33–40.

Phan, H. P., & Ngu, B. H. (2014). Longitudinal Examination of Personal Self-Efficacy and Engagement-Related Attributes: How Do they Relate. *American Journal of Applied Psychology*, 3(4), 80-91.

Reeve, J., & Tseng, C. (2011). Agency as a fourth aspect of students' engagement during learning activities. *Contemporary Educational Psychology*, *36*, 257-267.

Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The Measurement of Engagement and Burnout: A Two Sample Confirmatory Factor Analytic Approach. *Journal of Happiness Studies*, *3*(1),71-92.

Schaufeli, W. B., & Bakker, A. B. (2003). Test manual for the Utrecht Work Engagement Scale. Unpublished manuscript, Utrecht University, the Netherlands. Retrieved from http://www.schaufeli.com

Tinto, V. (1993). *Rethinking the causes and cures of student attrition* (2nd ed.). Chicago: University of Chicago Press.

Ulmanen, S., Soini, T., Pyhältö, K., & Pietarinen, J. (2014). Strategies for Academic Engagement Perceived by Finnish Sixth and Eighth Graders. *Cambridge Journal of Education*, *44* (3), 425-443.

Veikkaila, J. (2014). Doctoral Student Engagement: The Dynamic Interlpay between Students and Scholarly Communities. Doctoral thesis. University of Helsinki, Helsinki. https://helda.helsinki.fi/bitstream/handle/10138/42717/vekkaila_dissertation.pdf?sequence=1, access 10.04.2018

Vermunt, J.D.H.M. (1996) Metacognitive, Cognitive and Affective Aspects of Learning Styles and Strategies: A Phenomenographic Analysis. *Higher Education*, *31*, 25-50.

Wehlage, G., Rutter, R., Smith, G., Lesko, N., & Fernandez, R. (1989). *Reducing the Risk: School as communities of support.* Philadelphia: The Falmer Press.

Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Educational Research Journal*, *45*, 166 –183.