

# PROMOTION OF STUDENT SELF-DIRECTION IN COOPERATIVE LEARNING IN UNIVERSITY

## Studentu pašnoteikšanās veicināšana kooperatīvās mācīšanās procesā augstskolā

**Gunārs Strods**

Rezekne Higher Educational Institution, Latvia

E-mail: gunars@ru.lv

***Abstract.** This article presents results of implementation of principles of direction and liberalization in cooperative learning in teacher training. The purpose of the study was to work out and implement an educational model for promotion of student self-directed learning skills in teacher training in university, and explore the relationships between the cooperative learning process and self-directed learning development. Empirical data were collected through self-directed learning-readiness tests (SDLRS/LPA), student self-assessment questionnaires, and interviews at the beginning and the end of the semester. The data of experiment group were compared with control group data, and 170 students were involved in the study. Results indicate that self-directed learning readiness improves through cooperative learning processes for students of all levels, while in traditional process below average and average level students' readiness improves, and above average level students' readiness expressions are limited and readiness for self-direction decreases.*

***Keywords:** self-directed learning, cooperative learning, higher education.*

The European Commission White Paper *Teaching and Learning: Towards Learning Society* stems from the observation that the changes currently in progress have improved access to information and knowledge, but have simultaneously required considerable adjustments in the skills required and in working patterns. The society of the future will be a learning society. In light of this, it is evident that education systems, primarily the education of teachers and of those involved in training, have a central role to play (European Commission, 1995, 2001, 2010; Faure, 1972).

These tasks demand high collaboration and self-directed learning skills. Self-directed learning has various definitions. All definitions characterize the self-directed learner as responsible for his or her own learning and organization of the learning process (Knowles, 1975; Bolhuis, 1996). Learning should change from teacher-directed to student self-directed. Self-directed learners are more self-confident about their ability making the learning process meaningful and self-monitoring (Garrison, 1997).

To become a self-directed learner requires change from following the instructions of others to creating one's own tasks. The five stages of movement from teacher-directed to self-directed learning include 1) incidental self-directed learning, 2) teaching students to think independently, 3) self-managed learning, 4) self-planned learning, and 5) self-directed learning (Gibbons, 2002). Balanced implementation of principles of direction and liberalization are necessary in study-process organization. Cooperative learning gives the opportunity for development

from direction to self-direction and promotes students self-directed learning skills development (Corno, 1992; Beckett & Hager, 2002; Helds, 2006; Strods, 2007).

An educational model for student self-directed learning readiness promotion was based on implementation of principles of direction and liberalization in cooperative learning (Gibbons et al., 1980; Merriam & Caffarella, 1991, 1998; Eraut, 2000; Livingstone, 2001; Colley, Hodkinson & Malcolm, 2002). Principles for implementation are adapted from Veide's (1998) description of direction and liberalization in secondary school as noted in Table 1 (Strods, 2006).

Table 1

### **Principles of direction and liberalization**

- (A) The training plan and the learning outcomes of studies course can be modified by the students and educator according to the student's needs
- (B) It is reasonable to establish time and content limits, but students do not necessarily complete the task similarly or at the same time.
- (C) Many of the topics include a variety of scientific disciplines, so the different subject combinations in more lasting projects are often more successful than adherence to strict demarcation of the subject.
- (D) A variety of methods equally limited by topic, imagination of educator, knowledge of the nature of communication and sensitivity to students
- (E) Small groups of students choose how to complete the task or answer to research question, when and how to present group results, and the process of collaboration. Necessity for mandatory or compulsory learning does not arise if students can choose preferred methods and focus.
- (F) Students agree upon rules of cooperation. The fewer restrictions on student behavior, the more feelings of responsibility, solidarity, equality and independence of the student increase.
- (G) The community needs assessment – not only the student. Assessment should be non-discriminatory and based on evaluation of task results and group interaction, peer evaluation, and self-evaluation.
- (H) Praise can facilitate learning if it is genuine – and expression of positive feelings, not a psychological dressing-down.

Implementation of principles of direction and liberalization in the study process occurs when educators and students agree on common learning processes (Senge, 1990; Ramsden, 1992; Smith, 1999, 2003; Rudzītis, 2003; Rogers, 2003, 2004). The educator discusses with the students expected learning outcomes and helps the students define group and individual learning outcomes. Learning tasks in challenging situations encourage students to recognize their strengths and weaknesses and motivate them to complete the given task. Cooperative learning groups of three students develop the execution plan and include description of each member's individual responsibility, as well as learning outcomes in the final presentation.

Group size is based on Newcomb's (1953) and Festinger's (1957) cognitive orientation of small group theory. Human knowledge cannot be separated from behavior. To reach a balance, change is needed in either knowledge or behavior. Humans behave in compliance with a cognitive framework, but team members use interpersonal relations to balance the cognitive framework. Cognitive frameworks consist of social perception, attraction, attitudes and knowledge. If two group members perceive each other positively, then this attitude may be transferred to the third. Balance is stable if all three relations are positive, or one positive and two negative. Dissonance occurs when two relationships are positive and one is negative. If a pair or a group has a difference in their cognitive framework, the frequency of communication in the group increases. Frequency and content of communication in a triad keeps the group in balance and cohesive. Festinger (1957) found that the tendency to compare oneself to others decreases if differences increase between group members. If the cognitive framework of group members are similar, this leads to consensus. If the differences between group members are large and artificially inflated, the individual does not seek inclusion in the group. If the differences between group members are smaller, consensus is reached through conformism.

During the task students must adjust and analyze the process of cooperation – frequency, type and content of communication. Evaluation and analysis of the collaborative process in group work is an indispensable part of the learning task (Watkins & Marsick, 1993; Mandl & Reinmann-Rothmeier, 1995; Dunne & Bennet, 1996). The instructor organizes evaluation of student learning outcomes and, based on these outcomes, sets up a new, challenging learning situation. Group participants for some tasks are self-selected but for others, by the instructor. Throughout the semester students work in groups for short and long terms – one week or for the semester. Groups are organized based upon gender, age, learning style, residence, etc. Heterogeneity of group mates demand communication and planning for individual contribution (Cohen, 1994).

Several cooperative learning strategies and modifications of strategies were implemented to comply with basic elements of cooperative learning:

1. Positive interdependence

- Students must fully participate and put forth effort within their group
- Each group member has a task/role/responsibility; therefore each must believe that s/he is responsible for her or his learning and that of the group

2. Face-to-face interaction

- Group mates promote each other's success
- Students explain to one another what they have learned or are learning and assist one another with understanding and completion of assignments

3. Individual accountability

- Each student must demonstrate mastery of the content being studied
- Each student is accountable for his or her learning and work, therefore eliminating "social loafing"

4. Social skills

- Social skills must be taught in order for successful cooperative learning to occur
- Skills include effective communication, interpersonal and group skills - leadership, decision-making, trust-building, communication, conflict-management

#### 5. Group processing

- Every so often groups must assess their effectiveness and decide how it can be improved (Bennett, Rolheiser – Bennett & Stevahn, 1991; Jonson & Jonson, 1993; Brown & Ciuffetelli, 2009).

The stages or degrees of movement from entirely teacher-directed learning toward self-directed learning include the following:

- Incidental self-directed learning  
The occasional introduction of self directed learning activities into courses or programs that are otherwise teacher-directed (e.g. individual projects, stations, or brief introduction of any other forms of self directed learning on the spectrum).
- Teaching students to think independently  
Courses or programs that emphasize the personal pursuit of meaning through exploration, inquiry, problem solving and creative activity (e.g. debates, case studies, investigations, trials, dramatizations, fieldwork)
- Self-managed learning  
Courses or programs presented through learning guides that students complete independently.
- Self-planned learning  
Courses or programs in which students pursue course outcomes through activities they design themselves
- Self-directed learning  
Courses or programs in which students choose the outcomes, design their own activities and pursue them in their own way (Gibbons, 2002, 2004, 2008).

Cooperative learning situations include incidental self-directed learning, independent thinking, setting of learning targets and planning their achievement, problem solving, and presentation of achievements. Students equal collaborate with each other and educator during classes in university and outside. The type of cooperative learning implemented for students self-directed learning promotion comply with description of informal cooperative learning:

...incorporates group learning with passive teaching by drawing attention to material through small groups throughout the lesson or by discussion at the end of a lesson, and typically involves groups of two (e.g. turn-to-your-partner discussions). These groups are often temporary and can change from lesson to lesson (very much unlike formal learning where 2 students may be lab partners throughout the entire semester contributing to one another's knowledge of science). Discussions typically have four components that include formulating a

response to questions asked by the educator, sharing responses to the questions asked with a partner, listening to a partner's responses to the same question, and creating a new well-developed answer. This type of learning enables the student to process, consolidate, and retain more information learned (Johnson, Johnson & Holubec, 1988; Mandl & Reinmann-Rothmeier, 1995).

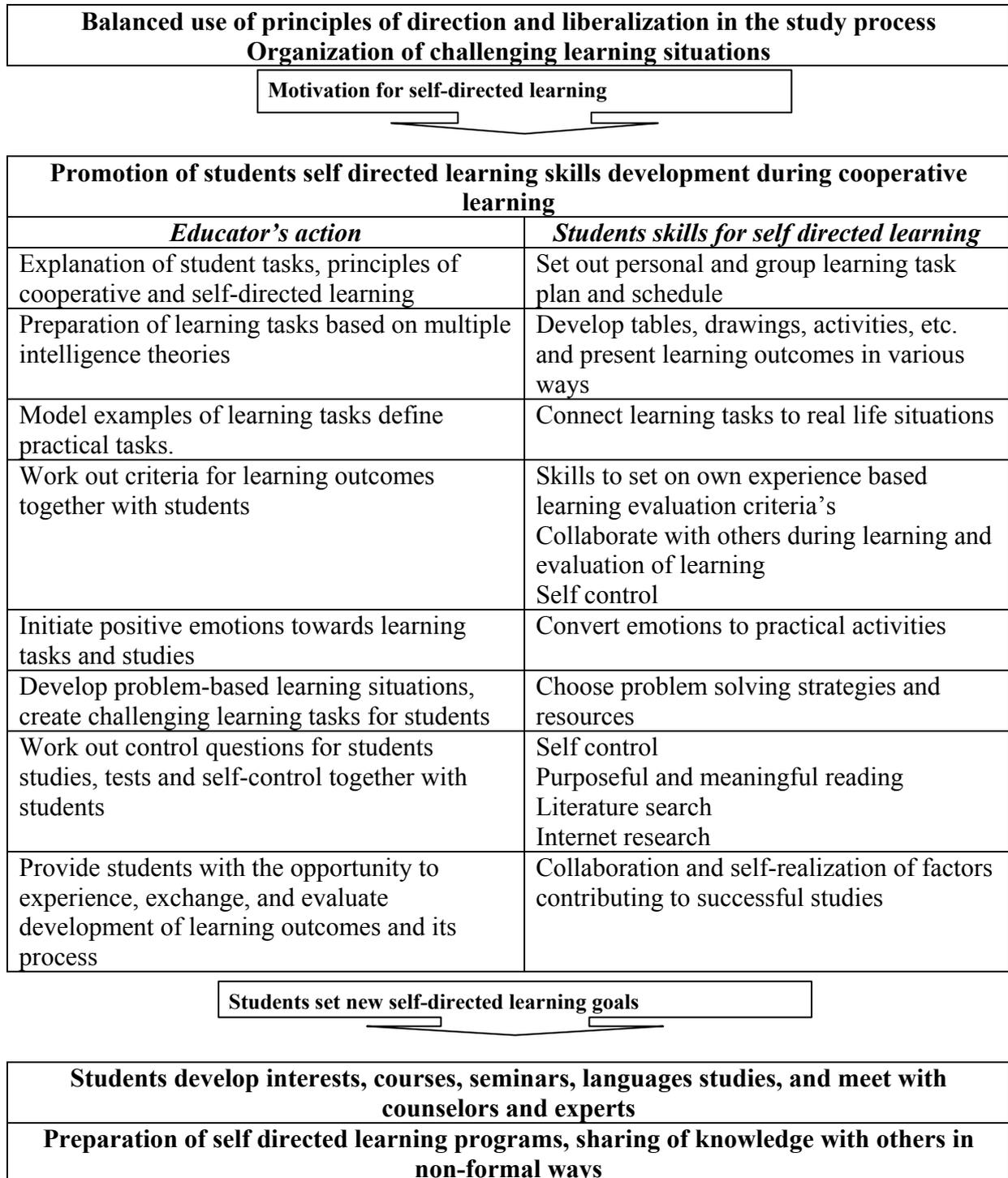


Figure 1. Educational model for promotion of student self-directed learning

Gibbons (2009) notes a transition from teacher-directed to self-directed learning in the cooperative learning study process model corresponding to the third and fourth degree in a self-managed and self-planned learning situation. Based upon Gibbons third and fourth levels, I worked an out educational model for promotion of cooperative learning and student self-directed learning skills in 2004, seen in Figure 1, which was implemented in teacher training programs and adapted as part of a experiment (Strods, 2003, 2006).

The volume of independent study at university demands that students have self-directed learning skills. However, there is an observed discrepancy between student readiness to act and performance requirements. On the one hand, pedagogy students experience contradiction between the ideals of the teaching profession and reality, and, on the other hand, between the ideals of themselves as teachers and their actual capabilities. This requires development of student self-directed learning skills by the university. Little research has examined the impact of organization of the study process on student self-directed learning.

This research was designed to create and implement an educational model for promotion of student self- directed learning skills among teacher candidates, explore relationships between cooperative learning process and development of self-directed learning and compare self-directed learning readiness and self-assessment of cooperative and traditional studies group students.

This study uses both quantitative and qualitative approaches in a concurrent mixed methods design (Teddlie & Tashakkori, 2006). Self-directed learning readiness, self-assessment, and interview data were collected from small (6-20) groups of students who participated in cooperative learning-based educational model pilot projects. Data were examined and compared with traditional studies group student data.

Data was collected between 2004 and 2010. Each year, a cooperative group of students took the SDLRS test in the beginning of each semester and at the end of semester after participation in a pilot program. Data were examined and compared with traditional studies group student data. The control groups were of similar size, but the students did not participate in the pilot project. All students completed a self-assessment questionnaire about their studies - priorities, goal-setting, time planning, skills, collaboration, and satisfaction with personal and professional growth evaluation (Long, 2009) at the beginning and end of the semester. All students also gave written answers to two open-ended questions. Eleven of cooperative group students interviewed at the end of semester using a structured interview format.

A total of 146 female and 24 male first-, second- and third-year students between the ages of 19 and 21 participated in the study. Of them, 133 students took the SDLRS test, 170 completed a self-assessment questionnaire and answered written questions. Eleven students participated in interviews. All students were introduced to the purpose of study.

Quantitative data was collected through the self-assessment questionnaire and Guglielmino's (1977) Self-Directed Learning Readiness Scale (SDLRS). It was designed to measure the various attitudes, skills, and characteristics that comprise an individual's current level of readiness to manage his or her own learning. The adult form of the SDLRS has 58 items. Respondents are asked to read a statement and then indicate the degree to which that statement accurately describes their own attitudes, beliefs, actions or skills (Guglielmino, 2009).

Persons with high SDLRS scores usually prefer to determine their learning needs and plan and implement their own learning. This does not mean that they will never choose to be in a structured learning situation. They may well choose traditional courses or workshops as a part of a learning plan.

Persons with average SDLRS scores are more likely to be successful in more independent situations, but are not fully comfortable with handling the entire process of identifying their learning needs and planning and implementing the learning.

Persons with below average SDLRS scores usually prefer very structured learning options such as lecture and traditional classroom settings. SDLRS scores indicate the current level of readiness for self-directed learning. Research studies have proven that SDLR levels can be raised through appropriate educational interventions (Guglielmino & Guglielmino, 1994). The average score for adults completing the SDLRS-A questionnaire is 214 and the standard deviation is 25.59 (Guglielmino & Guglielmino, 2006) as noted in Figure 2.

Table 2

**SDLRS scores and level of self-directed learning readiness (Guglielmino, 2009)**

<i>SDLRS-A score</i>	<i>Readiness for self-directed learning</i>
58-201	Below average
202-226	Average
227-290	Above average

SDLRS was translated into Latvian following the translation guidelines of the author Lucy M. Guglielmino (2006).

The self-assessment questionnaire includes 19 questions with a 10-point Likert-type scale, multiple-choice questions and one optional question. The self-assessment questions required students assess their own study skills, ability to collaborate, and other abilities. The multiple-choice questions required students to indicate the level of their priorities, goals, and time and materials management skills. The optional questions offered students the opportunity to elaborate on a specific topic of their choice.

Table 3

**Levels of self-directed learning readiness for all samples in the beginning and end of semester**

<b>Levels of self-directed learning readiness for all samples in the <i>beginning</i> of semester.</b>	<b>Levels of self-directed learning readiness for all samples in the <i>end</i> of semester.</b>
	<i>Number of SDLRS-A score</i>

**Number of SDLRS-A score**

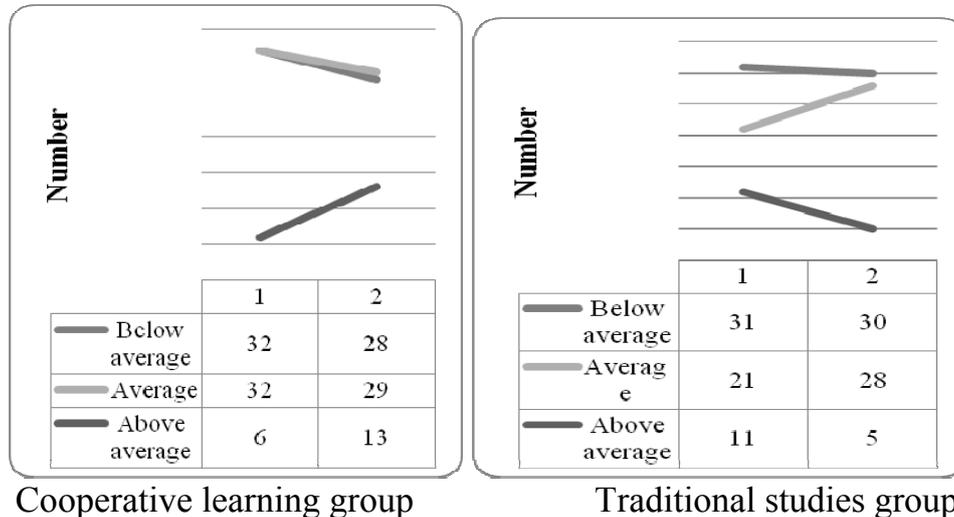
<i>Total – 133</i>	<i>Total - 133</i>
Below average – 63	Below average - 58
Average – 53	Average - 57
Above average - 17	Above average -18

Qualitative data was collected through structured interviews and include open-ended questions about student learning processes. Face-to-face interviews required the participant to elaborate on characteristics of self-directed learners. Qualitative data was analyzed using the AQUAD 6 program, and quantitative data was analyzed using SPSS 15. SDLRS scores were calculated by Guglielmino and her associates. The Cronbach-Alpha test, Kolmogorov-Smirnov test, Chi-Square test, Pearson Correlation, and Wilcoxon Signed Ranks Tests were used for statistical analysis.

Table 3 present levels of self-directed learning readiness for all samples in the beginning and end of each semester.

Results in table show above average and average SDLRS score increase, and a decrease in the number of samples with scores below average. The first and second SDLRS show 73 positive, four ties, and 56 negative ranks.

Figure 2 presents differences between levels of self-directed learning readiness of cooperative and traditional studies groups in the beginning and the end of the semester.



**Figure 2. Levels of self-directed learning readiness of cooperative and traditional studies groups in the beginning and the end of semester**

Figure 2 indicates that the cooperative group has six samples with above average SDLR in the beginning and 13 samples in the end of semester. The traditional studies group has 11 samples with above average SDLR in the beginning and five samples in the end of semester. The number of samples with average SDLR decreases in the cooperative group (32 - 29) and increases in the traditional studies group (21 - 28). The number of samples with SDLR below

average decreases in both groups (trial from 32 to 28 and control from 31 to 30). Self-directed learning readiness improved in cooperative learning processes for students of all levels, while in the traditional process, below average and average level students' readiness improves. Above-average students' readiness expressions are limited and readiness for self-direction decreases.

SDLRS scores in the cooperative group using the Wilcoxon Signed Ranks Test results indicate a significant difference between beginning and the end -  $p = ,011 < ,05$ . The Wilcoxon Signed Ranks test results indicate no significant difference between SDLRS scores in the traditional studies group in the beginning and the end of semester -  $p = ,749 > ,05$ .

SDLRS scores of all samples in the beginning and in the end of semester using the Wilcoxon Signed Ranks test results indicate no significant difference between beginning and the end -  $p = ,102 > ,05$ .

The mean score statistics for SDLRS are presented in Table 4.

Table 4

**Mean score statistics for SDLRS in cooperative, traditional studies and all samples groups in the beginning and the end of semester**

Group	Statistics	Beginning of semester	End of semester
Traditional studies	Number	63	63
	Mean	204,49	201,63
	Standart deviation	20,184	21,029
Cooperative	Number	70	70
	Mean	200,17	205,44
	Standart deviation	20,380	22,969
All samples	Number	133	133
	Mean	202,22	203,64
	Standart deviation	20,326	22,071

As indicated in Table 4 SDLRS mean scores in the beginning of semester were higher in the traditional studies group, but at the end of semester, mean scores were higher in the cooperative group. SDLRS mean scores in all samples were higher at the end of semester. The trial group showed an increase of 5,27 points. In the traditional studies group, the SDLRS fell an average of 2,86 points. SDLRS mean scores in the cooperative, traditional studies, and all samples groups in the beginning and end of semester were lower than the average score 214 for adults.

Self-assessment questionnaire data was analyzed using the Cronbach-Alpha test,  $(\alpha) = ,672$ . Questions about respondents' gender, age and test date were excluded from the analysis.

Mean scores of self-assessment of learning skills at the beginning and end of semester were compared with paired-samples T test. Mean scores were higher in the end in both the trial and control groups. V

The value of T test for traditional studies group  $p = ,003$ , cooperative group  $p = ,206$  not including in confidence interval of difference and indicate significant differences. In the cooperative group, the significance is lower than in the traditional studies group. The cooperative group students were involved in creating learning outcomes and self-evaluation during the semester leading to more adequate self-assessment of their skills.

The ability to set priorities is important in self-directed learning. Choices were prioritized according to self-directed learning skills ranging from 6 to 1 point:

1. Learn about myself, develop myself in as many fields as possible,
2. Acquire knowledge that I consider necessary for me,
3. Acquire as much knowledge as much possible,
4. Make friends and have a good time,
5. Graduate with as little effort as possible, and
6. Chose more than one or did not choose a priority.

Responses by respondents in both groups at the beginning and end of the semester show the dominance of first three priorities. Chi-square test between SDLRS score and chosen priority show an association -  $p = ,000$ .

Students' responses show that most students reached their goals for the semester. The second most frequent answer is the goal for their entire period of studies. The third most frequently given answer is the goal for each course, and the fourth is the goal for each academic year. These four options dominated. From self-directed learning perspective, the better answer is the goal for all period of study, year, semester and course. This response, like others options with multiple choices, was rarely mentioned. The numbers of choices for the option of reaching goals for the semester increased in both the trial and control groups. Each semester ends with an examination session, and exam results influence student responses.

Time management is an important part of self-directed learning. Daily time management is necessary for character building and every day routines are an important part of self-discipline. A weekly plan is suitable for short-term operations, as well as a monthly time frame. Daily, weekly and monthly planning system includes both self-discipline and concrete goal implementation plans. Student responses show dominance of the weekly plan, which is confined to the syllabus. The second most frequent response is the monthly time schedule. This is associated with students' schedules including study, work, visits to parents, and activities in cultural and sports events. The third most frequent answer is a daily time schedule. These time plans are subject to external circumstances rather than students' plans. Multiple responses appeared rarely, and single-choice answers dominated. It can be concluded that students' study time planning systems are externally determined rather than self-directed.

Students' answers about systematic learning in the cooperative and traditional studies groups were similar. The cooperative group members, compared with the traditional studies group's responses, had a tendency to learn and prepare for classes more systematically. The cooperative-learning model demanded a regular presentation of their learning outcomes – not possible without regular

learning. About one-third of the students answered that they studied autonomously rather than expecting to learn all during class. This may indicate a degree of self-directed learning readiness, or possibly lost opportunities within the entire study process. Students with higher self-directed learning readiness had fewer negative responses for systematic learning, and students with above average self-directed learning readiness level had none at all. In the traditional studies group, students with an above average self-directed learning readiness level have more negative responses to systematic learning than students with average levels. At the end of the semester the cooperative group students with average self-directed learning readiness level had no negative responses, but those with above average did. Students with higher self-directed learning readiness in the traditional studies group had a reduction in the number of negative responses for systematic learning at the end of semester. Numbers of negative responses from respondents' with below average self-directed learning readiness levels in both groups at both the beginning and end of the semester were relative stable.

Self-directed learning is closely linked to self-discipline tasks and character building. Therefore, questions on student satisfaction about method and frequency of feedback on academic achievement and personal development are important. Chi-square test between SDLRS score and students' satisfaction about feedback show an association  $p = ,000$ . The Pearson correlation between SDLRS scores and student satisfaction about feedback on academic and personal development are presented in Table 5.

Table 5

**Pearson correlation between SDLRS score and students satisfaction about feedback on academic and personal development**

	Traditional studies group			Cooperative group		
	Beginning semester	of	End of semester	Beginning semester	of	End of semester
SDLRS- academic achievement	,177**		,283**	,327**		,486**
SDLRS personal development	– ,249**		,169**	,359**		,351**.

A similar tendency appears at the beginning and end of the semester in the cooperative and traditional studies groups, as higher self-directed learning readiness students are more satisfied with feedback. This leads to the conclusion that regular feedback is a necessity for below average self-directed learning readiness level students. It appears that examinations twice a year is not enough, but step-by-step acquisition of learning outcomes is better for students.

The respondents' replies about learning self-discipline skills and caring about their academic achievement is an important indicator of self-directed learning. In cooperative learning models, students complete tasks in small groups that make

their views on each individual group member's learning process essential. At the beginning of the semester, less than half members of the trial group reported learning self-control (45.8%), but at the end of the semester more than half (58.1%) reported doing so. In the traditional studies group 63.6% reported learning self-control at the beginning of semester, but by the end of semester, 65.2% of respondents reported doing so. The cooperative group experienced a growth of 12.3%, while the traditional studies group only developed these skills by 1.6%. This figure is due to the cooperative learning model, which demands students take responsibility for their own learning outcomes, as well as that of the others.

At the beginning of semester, 83,2% of the respondents in the cooperative group assessed the self-directed learning skills of their classmates as good, but at the end of the semester the percentage was 83,6%. In the traditional studies group, 85,4% considered rated those skills as good, but at the end of semester the percentage dropped to 78,3%. The cooperative group's view was relatively constant, but in the traditional studies group, the assessment of fellow students learning skills dropped.

Cooperative learning models are based on the principles of cooperation, which also includes elements of individual learning and competition. To ascertain that cooperation also affects competition, respondents were asked about student competition in the field of academic achievement. Descriptive statistics - mean, median, mode - indicate slightly more intensive competition in the cooperative group.

To explore relationships between self-directed learning skills, self-assessment and self-directed learning readiness, Pearson's correlation analysis was used to analyze the traditional studies and cooperative groups' responses at the beginning and end of semester. The results are summarized in Table 6.

Table 6 shows correlation between self-directed learning skills self-assessment and SDLRS in the control group compared to the beginning and end where seven skills decreased, but increased in two skills. In the trial group, it decreased in three skills, but increased in six. These results show that student self-assessment of self-directed learning skills is related to self-directed learning readiness – if self-assessment is higher, then self-directed learning readiness is higher as well. The cooperative learning process reinforces commitment to the process itself. A positive perception of themselves as skilled individuals is a prerequisite for the process. The cooperative learning process, working with fellow students, facilitates work that is not possible to complete alone. Learning in challenging situations helped form positive self-assessment and learning skills.

Table 6

**Self-directed learning skills self-assessment and SDLRS Pearson's correlation analysis in control and trial group at beginning and end of semester**

Traditio nal group	Cooperativ e group 1x	Tradition al group 2x	Cooperativ e group 2x
--------------------------	--------------------------	-----------------------------	--------------------------

	1x			
	SDLRS 1	SDLRS1	SDLRS2	SDLRS2
I have skills for rational work with books	,412(**)	,340(*)	,278(*)	,591(**)
I have skills to make notes effectively	,274(*)	,204	,317(*)	,444(**)
I have skills to find necessary literature	,396(**)	,529(**)	,296(*)	,670(**)
I have skills to draw up schemas, tables and other overview materials	,243(*)	,408(**)	,200	,433(**)
I have skills to prepare reports and presentations	,322(**)	,426(**)	,254	,568(**)
I have skills to find learning materials through internet	,118	,253	,098	,401(**)
I discuss with other students what I learn outside lectures and practical classes	,432(**)	,325(*)	,145	,211
I and other students stimulate each other to attend classes	,374(**)	,511(**)	,267	,256
I and others students study together in non formal groups	,093	,381(**)	,154	,142

After completing the SDLRS test and self-assessment questionnaire, 170 respondents participated in a structured interview. In the traditional studies group 85 students participated at the beginning of the semester and 76 at the end; in the cooperative group 85 students participated at the beginning and 78 at the end of semester. Students responded to two statements: 1. Skills I'd like to develop are ..., and 2. My studies would become more successful if....

The most frequently named skills were communication, presentation, organizational, teamwork, listening, empathy, and planning. These skills were mentioned in a professional development context. The most frequently mentioned personal skills were independence, time management, learning new things, self-awareness, ability to express and defend their opinion, self-evaluation, creativity, and official language (Latvian) skills. Analysis of responses to the skills show that they are similar in nature and are grounded in the necessity for key competences and self-directed learning development.

With regard to factors influencing successful studies, the most common factors were more free access to the library (almost 24 hours), easy and free access to the Internet (including university, home, public spaces, etc.), previously prepared lecture materials, clear descriptions of learning outcomes, more feedback from lecturers, more lectures on concrete subjects, and more cooperative and practical

tasks. Other factors included better collaboration with fellow students, more free time, better living conditions, improved finances, better time management, increased motivation, better official language (Latvian) skills, better Internet skills, and goal setting. These factors indicate that students are more oriented to seek external factors for their success.

Qualitative analysis using AQUAD 6 was used to create a coding system for linkage analysis (Huber, 2008). Five codes were set for analysis: above average level of readiness for self-directed learning; average level of readiness for self-directed learning; below average level of readiness for self-directed learning; students' views on the things needed for developing one's self-direction; students' reference to collaboration in the study process. These codes were more relevant to study purpose and content of structured interview.

Table 7 reveals detailed results of structured interview codes using linkage analysis in cooperative and traditional studies groups at the beginning and end of semester.

Analysis of the interviews indicates that the factors needed for one's self-direction are related to collaboration in the study process both within groups of students as well as between students and educators. Comparison of the frequency of correlations reveals that students in the traditional study process mention collaboration twice as frequently at the beginning of the semester than at the end of the semester – the frequency of correlation decreases from 20 to 10. In the cooperative group, the frequency of correlation increases from 17 to 41 from beginning to end. This leads us to believe that the cooperative learning process has positively influenced students' view on collaboration in personal development as noted in Table 6.

Analysis of the interviews also confirm results of the analysis of the self-directed learning readiness scale test. Within the cooperative group, readiness for self-directed learning increases by the end of the semester, but decreases among those involved in the traditional study process. The interviews reveal that in the traditional study process, students refer to closer collaboration with educators at the end of the semester indicating a decrease in self-direction and also that a learning group is not considered a means for self-development.

Table 7

**Crosstab of frequency of linkages between codes in cooperative and traditional studies group interview at the beginning and end of semester**

	Frequency of linkages at the beginning of semester		Frequency of linkages at the end of semester	
<b>Linkages between codes</b>	<i>Tradition al group</i>	<i>Cooperat ive group</i>	<i>Traditio nal group</i>	<i>Cooperati ve group</i>

Students' views on the things needed for development of their self-direction – Collaboration in the study process	20	17	10	41
Collaboration in the study process – above average level of readiness for self-directed learning	3	-	2	5
Collaboration in the study process – average level of readiness for self-directed learning	6	9	2	12
Collaboration in the study process – below average level of readiness for self-directed learning	11	8	5	6
Students' views on the things needed for development of their self-direction – Collaboration in the study process – above average level of readiness for self-directed learning	3	-	2	5
Students' views on the things needed for development of their self-direction – Collaboration in the study process – average level of readiness for self-directed learning	6	9	2	11
Students' views on the things needed for development of their self-direction – Collaboration in the study process – below average level of readiness for self-directed learning	10	6	5	6

Analysis of the correlation between the collaboration in the study process and the levels of readiness for self-directed learning reveal that in the traditional study process, collaboration as a desirable element was more frequently mentioned by the students with a high or medium level of readiness for self-directed learning at the end of the semester. In comparison, students with low readiness mentioned it half as often.

In cooperative learning, students with high or medium readiness increasingly stressed the necessity for collaboration, while those with low readiness did not. This indicates the positive relationship between collaboration and readiness for self-direction – the higher the readiness, the more likely collaboration will take place in the group, and it appears that the cooperative learning process reinforces this tendency. However, students with low readiness for self-directed also mention the necessity for collaboration. This indicates a link to the self-directed learning readiness scale; in the cooperative group there are opportunities for developing self-direction for students of all levels. Analysis of the results of the written structured interview indicates a correlation between cooperative learning and

readiness for self-directed learning – if students participate in the cooperative learning process, then their readiness for self-directed learning increases.

Eleven third-year social work teacher candidates were interviewed in January 2010 at the end of semester after participation in an educational pilot project. Summary of answers to questions:

1. Describe a person who is ready to learn independently or is ready for self-directed learning.

Samples of answers - goal orientation, interests for something new, read a lot, have a will power, communicable

2. Describe your readiness for self-directed learning. To what extent do you correspond to the description of the person ready for self-directed learning?

Samples of answers -if I have interest about something I know how to learn it; I learn not only from university; in first year that was difficult complete tasks, but step by step with cooperation with others I had courage to learn

3. What helps reach readiness for self-directed learning?

Samples of answers -will power, initiative to achieve something in life, books, people

4. What impedes reaching readiness for self-directed learning?

Samples of answers -laziness, no interests, reference to time constraints, no time, if not understood and not have somebody to ask, problems and unpredictable situations

5. How to evaluate a completed study course – did it help reaching readiness for self-directed learning?

Samples of answers - The same, but helped to study and work. How to properly teach; A lot of practical work, presentations were repeatedly assessed, learned how to united group and cooperative learning structures; Ok. Provide readiness. A lot of the self designed tasks, we seeking information and that were self directed learning. Different, a lot of practical work and own way of thinking;

- Different. If usually individual learning then this was cooperation in group. It helps for self directed learning;

- A practical course of study. You can learn the best way to learn and master the content;

- Successful. Positive emotions. Opportunity to learn consolidate group. Will serve for further studies and I think that also for work. Helps for self development, not only how to teach others;

- There was a lot of exercise, which I knew that if will work in their profession, will use and recommend to others. Over the years the stock material to be I can to use. It was interesting. Perhaps that also influenced my self-directedness;

- Yes, helped. I will know how to do research. Different - a lot of work in groups;

- Does not help me directly. Did not differ;

- Different, a lot of practical tasks and presentations. Learn methods that could be used. I can better present myself and know how to present my work.

- Different. Very interesting. Develop skills for team work. Get knowledge about cooperative learning. I can help others, to share with others, working in a group and move towards the target.

The interviews with the participants of the cooperative group in the end of the semester confirm the relation of the theoretical and empirical research and that readiness for self-directed learning shall be developed and self-directed learning skills shall be acquired in the cooperative learning challenge situations in the cooperative learning process. The participants appreciated the study process of the pedagogical model for promoting self-directed learning and their growth of self-direction in it.

### **Conclusions**

Main results of empirical study evidence for: students of cooperative groups have higher SDLRS mean score at end of semester; cooperative group students self assessment correlate with SDLRS score at the end of semester; the results of the interview confirm the results of the analysis of the self-directed learning readiness scale test – in the cooperative group readiness for self-directed learning in the end of semester increases, but in the traditional process – decreases.

Conclusions of university students self-directed learning skills promotion during cooperative learning process:

- development of self-directed learning skills are more successful if self-direction is significant for students and become a subject of self development;
- educator should organize challenging learning situations based on balanced using of principles of liberation and direction and support students self-directed learning;
- cooperative learning are used for long term tasks with academic and self-directed learning skills development goals;
- students need a reach learning environment.

### **Bibliography**

1. Beckett, D., Hager, P. (2002). *Life, Work And Learning: Practice in Postmodernity*. London: Routledge.
2. Bennett, B., Rolheiser – Bennett, C., Stevahn L. (1991). *Cooperative Learning: Where Heart Meet Mind. Educational Connections*. Ontario.
3. Bolhuis, S. (1996). *Towards Active and Selfdirected Learning. Preparing for Lifelong Learning, with Reference to Dutch Secondar Education*. New York: American Educational Research Association.
4. Brown, H., Ciuffetelli, D.C. (2009). *Foundational methods: Understanding teaching and learning*. Toronto: Pearson Education.
5. Cohen, E. (1994). *Designing Groupwork: Strategies for the Heterogeneous Classroom*. New York: Teachers College Press.
6. Colley, H., Hodkinson, P.& Malcolm, J. (2002). *Non-formal learning: mapping the conceptual terrain. A Consultation Report*. Retrieved December 3, 2010, from The informal education archives: [http://www.infed.org/archives/e-texts/colley\\_informal\\_learning.htm](http://www.infed.org/archives/e-texts/colley_informal_learning.htm).

7. Corno, L. (1992). Encouraging students to take responsibility for learning and performance. *Elementary School Journal* , 69-83.
8. Dunne, E., Bennet, E. (1996). *Talking and Learning in Groups*. New York: Routledge.
9. Eraut, M. (2000). Non-formal learning, implicit learning and tacit knowledge. F. C. (Ed), *The Necessity of Informal Learning*. Bristol : Policy press.
10. European Commission. (2010, 02 04). *New skills for new jobs*. Retrieved 04 26, 2010, from European Commission. Education and Training: [http://ec.europa.eu/education/news/news2122\\_en.htm](http://ec.europa.eu/education/news/news2122_en.htm)
11. European Commission. (2001, 11 21). *Making a European Area of Lifelong Learning a Reality*. Retrieved 03 11, 2010, from Summaries of EU legislation: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52001DC0678:EN:HTML>
12. Faure, E. (1972). *Learning to be: The world of education today and tomorrow*. Paris: UNESCO.
13. Festinger, L. (1957). *A theory of cognitive dissonance*. Evanston, IL: Row, Peterson.
14. Garrison, D. (1997). Self- directed Learning: Toward a Comprehensive Model. *Adult Education Quarterly* , 18-48.
15. Gibbons, M. (2008). *Becoming Self-directed*. Retrieved 03 22, 2010, from Self- Directed learning: <http://www.selfdirectedlearning.com/becomingSDL.html>
16. Gibbons, M. (2009). *Becoming self-directed*. Retrieved 03 23, 2010, from Self- Directed learning: <http://www.selfdirectedlearning.com/Activity8.html>
17. Gibbons, M. (2004). *Pardon Me, Didn't I Just Hear A Paradigm Shift*. Retrieved 02 24, 2010, from Self-directed Learning- Teaching, education, learning: <http://www.selfdirectedlearning.com/article3.html>
18. Gibbons, M. (2002). *The Self-Directed Learning Handbook: Challenging Adolescent Students to Excel*. San Francisco: Jossey-Bass.
19. Gibbons, M., Bailey, A., Comeau, P., Schmuck, J., Seymour, S., Wallace, D. (1980). Toward a Theory of Self-Directed Learning: a Study of Experts Without Formal Training. *Journal of Humanistic Psychology* , 20-41.
20. Guglielmino L.M., Guglielmino P.J. (1994). Practical experience with self-directed learning in business and industry human resource development. In R. B. R. Hiemstra, *Overcoming resistance to self-direction in adult learning. New Directions for Adult and Continuing Education* (pp. 39-46).
21. Guglielmino P.J., Guglielmino L.M. (2006). Culture, self-directed learner readiness, and per capita income in five countries. *SAM Advanced Management Journal* , 21-28.
22. Guglielmino, L. M. (2009). *What is the Self-Directed Learning Readiness Scale?* Retrieved 04 25, 2010, from Learning Preference Assessment: <http://lpsdlrs.com/>
23. Hells, J. (2006). Macīšanās kā konstruktīvs un sistēmisks jēdziens [Learning as constructiv and systemic concept]. In I. Maslo, *No zināšanām uz kompetentu darbību [From knowledge to competencies]* (p. 186). Rīga: LU Akadēmiskais apgāds.
24. Huber, G. (2008). *AQUAD Six. The program for the anlysis of qualitative data*. Retrieved 01 05, 2011, from <http://www.aquad.de/eng/index.html>
25. Johnson, D., Johnson, R., Holubec, E. (1988). *Advanced Cooperative Learning*. Edin: MN: Interaction Book Company.
26. Jonson D., Jonson R. (1993). *Circles of Learning. Cooperation in the Classroom. Fourth Edition*. Minnesota: Interaction Book Compan.
27. Knowles, M. S. (1975). *Self-directed learning*. New York: Association Press.
28. Livingstone, D. (2001, 01 31). *Adults' Informal Learning: Definitions, Findings, Gaps, and Future Research*. Retrieved 03 11, 2010, from ERIC: [http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content\\_storage\\_01/0000019b/80/29/c9/e8.pdf](http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/29/c9/e8.pdf)

29. Long, H. B. (2009, 11 16). *Skills for Self-Directed Learning*. Retrieved 02 22, 2010, from The University of Oklahoma:
30. <http://faculty-staff.ou.edu/L/Huey.B.Long1/Articles/sd/selfdirected.html>
31. Mandl, H., Reinmann-Rothmeier, G. (1995). Unterrichten und Lernumgebungen gestalten. In A. K. B. Weidenmann, *Pädagogische Psychologie*. Weinheim: Beltz.
32. Merriam and Caffarella. (1991,1998). *Learning in Adulthood. A comprehensive guide*. San Francisco: Jossey-Bass.
- 33.
34. Newcomb, T. (1953). An Approach to the Study of Communicative Acts. *Psychological Review*, Vol. 60 , pp. 393-404.
35. Ramsden, P. (1992). *Learning to Teach in Higher Education*. London: Routledge.
36. Roger, A. (2004). *Looking again at non-formal and informal education - towards a new paradigm*. Retrieved 03 10, 2010, from The encyclopaedia of informal education:
37. [www.infed.org/biblio/non\\_formal\\_paradigm.htm](http://www.infed.org/biblio/non_formal_paradigm.htm)
38. Rogers, A. (2003). *What is the Difference? A new critique of adult learning and teaching*. Leicester: NIACE.
39. Rudzītis, G. (2003). *Vecāko skolēnu un studentu sagatavošana pašizglītībai.[Preparing students for selfeducation]*. Jelgava: LLU.
40. Senge, P. (1990). *The fifth discipline:The art and practice of the learning organization*. New York: Doubleday.
41. Smith, M. (1999,2003). *Learning theory*. Retrieved 03 09, 2010, from The encyclopedia of informal education: [www.infed.org/biblio/b-learn.htm](http://www.infed.org/biblio/b-learn.htm)
42. Strods, G. (2003). Studentu pašizglītība studiju procesā.[Students self-directed learning in university]. *Personality. Time. Communication. International scientific conference* (pp. 122-131). Rezekne: Rēzeknes Augstskola.
43. Strods, G. (2006). Studentu pašizglītības pedagoģiskie aspekti. [Educational aspects of students self-directed learning]. *Society. Integration. Education* (pp. 93-105). Rezekne: Rezekne University.
44. Teddlie, CH. & Tashakkori, A. (2006). A general typology of research designs featuring mixed methods. *Research in the schools*, 13 (1) , 12-28.
45. Veide, M. (1998). *Garīgās brīvības veidošanās pusaudžiem skolā. Promocijas darbs.[Development of adolescents spiritual freedom in school]*. Rīga: LU PPI.
46. Watkins, K., Marsick, V. (1993). *Sculpting the learning organization*. Jossey-Bass: San Francisco.

<p><b>Gunārs strods</b> Rezekne Higher Education Institution  Atbrīvošanas aleja 115, Rēzekne, LV-4601, Latvia  E-mail: <a href="mailto:gunars@ru.lv">gunars@ru.lv</a></p>
--