

HUOM! Tämä on alkuperäisen artikkelin rinnakkaistallenne. Rinnakkaistallenne saattaa erota alkuperäisestä sivutukseltaan ja painoasultaan.

Käytä viittauksessa alkuperäistä lähdettä:

Lehmusto, T. (2021). *Lion's Jaw* as a learning environment – effects of a pedagogical concept in higher education students' intrinsic motivation. eSignals Research. Haettu osoitteesta:
<https://esignals.fi/research/en/2021/06/24/lions-jaw-as-a-learning-environment-effects-of-a-pedagogical-concept-in-higher-education-students-intrinsic-motivation>

PLEASE NOTE! This is an electronic self-archived version of the original article. This reprint may differ from the original in pagination and typographic detail.

Please cite the original version:

Lehmusto, T. (2021). *Lion's Jaw* as a learning environment – effects of a pedagogical concept in higher education students' intrinsic motivation. eSignals Research. Retrieved from:
<https://esignals.fi/research/en/2021/06/24/lions-jaw-as-a-learning-environment-effects-of-a-pedagogical-concept-in-higher-education-students-intrinsic-motivation>

© All Rights Reserved

LION'S JAW AS A LEARNING ENVIRONMENT

- EFFECTS OF A PEDAGOGICAL CONCEPT IN HIGHER EDUCATION STUDENTS' INTRINSIC MOTIVATION

Lehmusto Teemu, Senior Lecturer (MSc) / sports and wellbeing
Haaga-Helia University of Applied Sciences, Vierumäki Campus
teemu.lehmusto@haaga-helia.fi
+358 (0)50 412 29 23

ABSTRACT

This study focused on specific learning environment *Lion's Jaw* in the higher education of Haaga-Helia UAS. The aim was to study how the learning environment and pedagogical concept affected students' intrinsic motivation during the years 2018-2020. Study also empirically tested the effects of a specific learning environment on students' basic psychological needs satisfaction and tested the new measurement model (IMLIPA). The study has been theoretically based on self-determination theory. SDT proposes that person's motivation can differ from external to intrinsic motivation. Intrinsic motivation depends on the satisfaction of basic psychological needs of autonomy, competence and relatedness.

The study was implemented during the years 2018-2020. First-year students (n=137) formed the study population. Data was gathered with a survey that included 60 propositions based on autonomy, competence and relatedness. Statistical analyses were done to form explaining factors for basic psychological needs satisfaction and to form indicators for autonomy, competence, relatedness, and IMLIPA (*intrinsic motivation level in project assignment*) to study students' perceived intrinsic motivation.

The results of this study showed that the learning environment and pedagogical concept of *Lion's Jaw* may support basic psychological needs satisfaction and students' intrinsic motivation. Project-based studies formed a good learning environment in higher education and enabled the implementation of UAS working life development task. In learning environment design careful planning and defining students' freedoms and responsibilities in a project work should be considered. Team working and project-based learning can enable the efficient learning of generic skills alongside with specific skills. More experienced students as team leaders may have positive effects on relatedness among students. IMLIPA is expected to be a useful measurement model for further testing and research in UAS context and learning environments utilizing project-based learning.

Keywords: higher education, project-based learning, intrinsic motivation, basic psychological needs

INTRODUCTION

Lion's Jaw is a creative pedagogical concept for higher education project-based learning course that has been implemented six times in Haaga-Helia UAS Vierumäki Campus. This course is based on a working life's assignment which gives a common goal for solving a project-related problem. First-year students are divided into small teams that are led by third year students. Learning objectives differ from first year students' service design and project learning to third year students' management and leadership objectives. Three to four teachers are involved in this process for theory lecturing and guidelining but most importantly guiding and coaching the third-year students' in their challenge of leading the project and teams. During fall semester teams work together twice a week and on their own time and their four-month-long project culminates in a final event where all the teams present their ideas for the Vierumäki business executives who choose one idea or concept for implementation. For the most of first-year students this pedagogical concept is something they have never experienced and differs from their earlier experiences of learning in educational contexts. Third-year students have the experience from their first year as participants but as project leaders they step into a new role. The fall semester in *Lion's Jaw* is challenging, yet rewarding learning experience of working life-oriented education. Taking this into account, it is likely that the motivation of the students will be tested. (Lehmusto, 2018a, 2018b, 2018c, 2019.)

Self-determination theory

Former and broad research supports the idea of designing learning environments that acknowledge the three basic needs of autonomy, competence, and relatedness as the key elements of students' motivation. Research has shown that intrinsic motivation is related to the higher rate of graduation (i.a. Wrezneswski et. al., 2014), higher academic success (i.a. Vansteenkiste et. al., 2006), more time spent on studying, academic performance, and deep learning (Everaert et. al., 2017). Intrinsic motivation also supports and increases individual well-being and experience of self-determinative behavior (Deci & Ryan, 2008; Ryan & Deci, 2017).

From this point of view, *Self-determination theory* (SDT) offers a framework for understanding human motivation. According to SDT, individual human development is characterized by a proactive engagement, behavioral regulations, and finding integration within social contexts. (Ryan & Deci, 2017, pp. 3-8.) From SDT's point of view people are considered proactive organisms and people's proactivity is steered towards increasing level of self-organization (Vansteenkiste & Ryan, 2013). In organizations proactive behaviors are fostered when people have a high level of personal initiative combined with high autonomous and low controlled work motivation (Grant et. al., 2011).

In social contexts, like education and work, optimal motivation depends on the satisfaction of basic psychological needs. Promoting the satisfaction of the basic needs for *autonomy*, *competence*, and *relatedness* can enhance the engagement with learning and work. From this perspective, optimal motivation is autonomous motivation which comprises intrinsic motivation and well internalized extrinsic motivation. (Ryan & Deci, 2017, pp. 3-8.)

There are six mini-theories in SDT corresponding to different aspects of motivation and psychological integration. The mini-theories are *cognitive evaluation theory* (CET), *organismic integration theory* (OIT), *causality orientations theory* (COT), *basic psychological needs theory* (BPNT), *goal contents theory* (GCT) and *relationship motivation theory* (RMT). Of these six mini-theories, CET, OIT, and BPNT make up the major elements of SDT's empirically based approach to work motivation. (Ryan & Deci, 2017, pp. 123-293, 536.) CET focuses on factors that facilitate or undermine intrinsic motivation. Theory proposes that intrinsic motivation is dependent on experiences of autonomy and competence. (e.g., Deci, 1975; Deci, 1980; Ryan, 1982; Ryan et. al., 1983.) Some of these are external events affecting on an intrapersonal level, but many events take place inside of social contexts and interpersonal relationships. (Ryan & Deci, 2017, pp. 158-159). According to BPNT basic need satisfactions tend to positively relate to one another and the satisfaction of basic psychological needs of autonomy, competence and relatedness are essential to optimal development and well-being (Ryan & Deci, 2017, p. 242, 249). In SDT, autonomy refers to the experience of integrity, volition, and human's self-organization and self-regulation. The need for competence is a learning organism's adaptation to new challenges in changing contexts through an interested and open mindset. The tendency towards relatedness is a deep design feature of social organisms and the need for relatedness ensures more cohesive social organization. (Deci & Ryan, 2000.) Sheldon and Niemiec (2006) proposed that balance in the satisfaction of the basic needs is important to wellness. Yet, the satisfaction of each of the three psychological needs is facilitated by autonomy support (Ryan & Deci 2017, p. 247) and autonomy support is associated with stronger engagement for work (e.g. Gagné, 2003).

Concepts of internalization and integration are central to OIT. They can result in external, introjected, identified, and integrated motivational regulation which vary in their degree of autonomy. Greater relative autonomy is associated with higher quality behavior and greater persistence (Ryan & Deci 2017, p. 179.) The continuum of relative autonomy defines the taxonomy of different motivations and regulatory styles. Motivations in the continuum are amotivation, external motivation, and intrinsic motivation. (Ryan & Deci, 2000.) In external motivation,

regulation can be introjected that is based on internal controls; regulation through identification that accepts external motivation as important and personally valued; and integrated regulation that fully self-endorses extrinsic motivation. (Ryan & Deci, 2017, pp. 191-192). Integrated motivation is usually more essential in long-term performing because intrinsic motivation is more changeable in its nature. (Koestner & Losier, 2002). That makes the concept of integrated motivation particularly fruitful from work-perspective. It expands the possibilities to support person's enthusiasm and guiding it towards the shared goal. (Martela & Jarenko, 2014.) Integrated regulation involves doing activities (e.g. learning and work) because they are congruent with one's values or goals. Intrinsic motivation involves doing activities because the activities themselves are enjoyable and interesting by nature. Integrated regulation and intrinsic motivation are highly autonomous or self-determined type of behavior. When people's behavior is regulated through more autonomous or integrated forms of internalization, they will display more effective performance, especially for more difficult or complex actions on different domains. Conditions that support the satisfaction of basic psychological needs for autonomy, competence, and relatedness facilitate intrinsic motivation, and internalization and integration of extrinsic motivation. (Ryan & Deci, 2017, p. 197, 208, 239.)

The aim of the study

The learning environment forms a social context including a common goal of solving the work-life assignment. Although this framework and course's learning objectives remain the same, working-life assignments, size of the project groups, third-year student leaders, and some of the teachers are different each year. In that way the learning environment of *Lion's Jaw* has been slightly different in the years 2018-2020. In this context students' goal-directed behavior is likely to vary from external regulation to autonomous and controlled motivation depending on students' experiences of the learning environment and the learning tasks during the project. If students experience satisfaction of basic psychological needs, it is assumable that with integration the student's extrinsically motivated actions have been volitional (Ryan & Deci, 2000).

From educational perspective it is optimal to pursue a learning environment that supports basic psychological needs of the students. In this study, the hypotheses claim that 1) the learning environment of Lions' Jaw supports students' intrinsic motivation and yearly variation in the learning environment does not affect students' motivation in general; 2) measuring satisfaction of autonomy, competence, and relatedness indicates student's integrated regulation and intrinsic motivation; 3) testing the new measurement model (IMLIPA) indicates if there are differences in satisfaction of autonomy, competence, and relatedness.

Results and arising topics for further research contribute to work-oriented learning, team learning and project-based learning in UAS context. Main findings and conclusions can be applied in implementation of the new curriculum in Haaga-Helia UAS Degree Programme in Sport and Leisure Management starting in fall 2021.

METHODS

Research data and subjects

Research data was gathered during the years 2018-2020 with Webropol survey and reporting tool (Webropol Inc., Helsinki, Finland). The research data was formed by the survey that was designed for the specific learning environment by the researcher. The aim of the survey was to gather data for development of the learning environment and to study the effects of the pedagogical concept in students' intrinsic motivation. The study population consisted of 137 first year students of Haaga-Helia UAS sports and leisure management degree programme. The survey contained age, sex, and the name of a project group and the names of project leaders (third year students) as background variables. Surveys' cover letters and guides emphasized anonymity and confidentiality and specific background variables were asked only enabling to combine individual answerers in their project groups. The researcher was responsible for data gathering and the researcher or other lecturer involved was present while students answered the surveys. All the student groups took the survey in the same space at the same time at the end of the project. 2018 and 2020 students took the survey after the final event and 2019 students before the final event.

Measurements

The survey consisted of five proposition-based evaluation matrixes that used Likert scale (1=strongly disagree...5=strongly agree). Altogether the survey consisted of 60 propositions. Also, in the end students were able to give open feedback. Evaluation matrixes and propositions within them were divided into the separate matrixes of autonomy, competence, relatedness, and generic skills in project related work. Basic psychological need matrixes' propositions were based on two main sources. Propositions were formed applying the theories of CET, OIT, and BPNT (Ryan & Deci 2017, 123-157, 179-215, 239-271) and the elements of basic psychological needs (Martela, 2015, pp. 53-144, 203-208; Martela et. al., 2016). Also adapting Chen et al. (2015) basic psychological need satisfaction and frustration scale (BPNSFS) was considered but decided not to be applied because focus was on developing a new measurement model for specific context.

Statistical analyses

All statistical analyses were executed with SPSS version 26 (SPSS, Chicago, IL, USA). In the first phase exploratory maximum likelihood factor analysis with varimax rotation was used for identifying and forming significant factors to explain first-year students' perceived autonomy, competence, and relatedness of 2018-2020 data. Factor loadings exceeding 0.50 were accepted. Cronbach's coefficient alpha was used to estimate reliability. Univariate analyses were applied to describe the data. First-order factor analyses was done from each psychological need to identify consistent factors. This led to excluding some items (propositions) from explaining factors. From the autonomy 4 items, from the competence 1 item and from the relatedness 1 item were excluded.

Second order factor analysis was done to form factors that were more consistent. Exploratory maximum likelihood factor analyses with varimax rotation were used to identify greater valid items from first phase factors. Factor loadings exceeding 0.50 were accepted. As a result, eight explaining factors were formed and the reliability of the factors was tested with Cronbach's coefficient alpha. Also, Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity indicated that correlation matrix was proper for factor analyses.

The Kolmogorov-Smirnov and the Shapiro-Wilk tests indicated that data was not normally distributed ($p < 0.05$). Differences between the years 2018-2020 were tested with Kruskal-Wallis one-way ANOVA test which is suitable nonparametric test for proposition-based scales. The test was made from student specific overall means of autonomy, competence, relatedness, and IMLIPA which were formed from the factors and their propositions. The same test was used for identifying differences between background variables. Other background variables were not examined because further testing would have been insignificant for the study. IMLIPA values were tested for statistical significance with chi square test.

RESULTS

Basic psychological needs

Final factors as presented in TABLE 1 included three autonomy factors (BIP, OAPW, AWP), two competence factors (DC, GD), and three relatedness factors (BTSTW, CPL, STA). Sum and mean variables were calculated among autonomy, competence and relatedness from the data (TABLE 2). Autonomy mean variables were 4,09 (2018), 4,28 (2019) and 4,31 (2020), competence mean variables were 3,82 (2018), 3,88 (2019) and 3,84 (2020), and relatedness mean variables were 4,32 (2018), 4,50 (2019) and 4,47 (2020). Results indicate that the mean variables of basic psychological

needs have been on good level on autonomy and relatedness. In the year 2019 relatedness mean reached excellent level. On competence mean variables indicate moderate level. Mean variables range from 0,15 to 0,34 on factor level.

The Kruskal-Wallis test indicated no significant differences between 2018-2020 groups: (H(2)=0.513; p=0,764; median 4,341) in overall data. The test did not show significant differences across samples in autonomy (H(2)=3.352; p=0,187; median 4,33), competence (H(2)=0.560; p=0,756; median 3,93), or relatedness (H(2)=0.049; p=0,976; median 4,62). Among the first-year students, the test showed significant difference in items between sexes in two factors of autonomy (OAPW, AWP) and two factors of relatedness (BTSTW; STA). These items are indicated in TABLE 1.

TABLE 1. Explaining factors for basic psychological needs (2018-2020 data).

Explaining factors	Propositions	Correlation matrix values
<u>AUTONOMY</u>		
Being interested in the project (BIP) $\alpha = ,837$	The project was truly interesting	,930
	Doing the project was inspiring	,816
	I wanted to learn and build up my competence during the project	,527
Opportunities to affect the project work (OAPW) $\alpha = ,806$	I had freedom to express opinions during the project *	,774
	I had opportunity to affect my role in the project	,660
	I had enough responsibility during the project	,734
Autonomous working in the project (AWP) $\alpha = ,772$	I was able to achieve results independently *	,807
	I was active participant during the project	,645
	My actions had impact on success of the project	,580
KMO (,792) Bartlett's (585,619, df 36, p<0.001)		
<u>COMPETENCE</u>		
Development of competences (DC) $\alpha = ,896$	My organizational skills improved during the project	,820
	My scheduling and use of time improved during the project	,748
	My socio-emotional skills improved during the project	,717
	My problem-solving skills improved during the project	,676
	I improved on setting goals during the project	,668
	My self-knowledge improved during the project	,643
	My learning skills improved during the project	,624
	My self-assessment skills improved during the project	,543
Guidance of development (GD) $\alpha = ,880$	I got feedback that affected positively my learning and development	,793
	I got enough corrective feedback during the project	,762
	I had opportunities to try out and make mistakes during the project	,748
	I got enough encouraging feedback during the project	,746
	I received assistance if needed during the project	,600
KMO (,902) Bartlett's (1045,349, df 91, p<0.001)		
<u>RELATEDNESS</u>		
Belonging to the team and successful team work (BTSTW) $\alpha = ,963$	I got along with my team well *	,930
	We had a good team spirit *	,914
	I prospered in our team *	,889
	We respected each other in our team *	,861

	We trusted each other in our team *	,788
	Our team work could be described as energetic *	,743
	I fit in our team well	,738
	I got to know our team members well *	,732
	We had opportunities to utilize our strengths in team work	,727
	We had opportunities to affect how our goals were achieved	,725
	We achieved a lot as a team *	,637
	I was able to contribute ideas in our team work *	,622
	We set goals together in our team	,617
Competent project leading (CPL) $\alpha = ,938$	Our third-year student leaders were competent	,890
	Our third-year student leaders had expertise	,794
	I trusted in our third-year student leaders	,787
	Our third-year student leaders provided us learning opportunities	,783
	Our third-year student leaders' interaction was consistent	,657
Safe team atmosphere (STA) $\alpha = ,886$	I felt that our third-year student leaders cared for me as a member of the team *	,865
	I felt that third-year student leaders trusted me in the project	,761
	I felt that our team was treated equally during the project	,595
KMO (,922) Bartlett's (3094,259, df 210, p<0.001)		

* The distributions in sexes differed significantly, p<0.05 (2-sided)

TABLE 2. Basic psychological needs and intrinsic motivation level in project assignment means.

Explaining factors	2018	2019	2020	Significance between 2018-2020 groups
Autonomy (BIP, OAPW, AWP)	4,09	4,28	4,31	p=0,187
Stdev.	0,95	0,86	0,8	
Competence (DC, GD)	3,82	3,88	3,84	p=0,756
Stdev.	0,95	0,95	0,89	
Relatedness (BTSTW, CPL, STA)	4,32	4,50	4,47	p=0,976
Stdev.	1,02	0,73	0,87	
IMLIPA	4,11	4,25	4,24	p=0,764
Stdev.	1,01	0,88	0,91	

Intrinsic motivation level in project assignment

Within the basic psychological needs factors a mean variable was used to describe IMLIPA (intrinsic motivation level in project assignment) value as shown in TABLE 2. The value for intrinsic motivation level in project assignment (1=weak...5=excellent) was used to compare the study population in different years and to determine percentage shares of variation in intrinsic motivation (TABLE 3). The chi square test indicated no significant differences on IMLIPA values between 2018-2020 groups: $\chi^2(4)=6,28$; p=0,179.

Year 2018 IMLIPA mean variable was 4,11 (g). Also, student specific values were calculated and results indicated that 36 % of the students exceeded level 4,5 (e), 30 % were between levels 4,0-4,5 (g), 26 % were between levels 3,0-4,0 (m), and only 8 % were between levels 2,0-3,0 (l).

Year 2019 IMLIPA mean variable was 4,25 (g). Student specific results indicated that 42 % of the students exceeded level 4,5 (e), 30 % were between levels 4,0-4,5 (g), 25 % were between levels 3,0-4,0 (m), and 3 % were between levels 2,0-3,0 (l).

Year 2020 IMLIPA mean variable was 4,24 (g). Student specific results indicated that 23 % of the students exceeded level 4,5 (e), 50 % were between levels 4,0-4,5 (g), 27 % were between levels 3,0-4,0 (m). None of the students were on a lower level.

TABLE 3. Intrinsic motivation level in project assignment values as percentual distribution.

IMLIPA 2018-2020 levels	IMLIPA 2018 (n=53)	IMLIPA 2019 (n=40)	IMLIPA 2020 (n=44)
1 – 2 (w) weak	0 %	0 %	0 %
2 – 3 (l) low	8 %	3 %	0 %
3 – 4 (m) moderate	26 %	25 %	27 %
4 – 4,5 (g) good	30 %	30 %	50 %
4,5 – 5 (e) excellent	36 %	42 %	23 %
	100%	100%	100%

No significant differences between 2018-2020 groups $\chi^2(4)=6,28; p=0,179$

DISCUSSION

Did the yearly variation in the learning environment affect students' motivation?

The main finding of this study was that according to IMLIPA values, working-life assignments, size of the project groups, changing third year student leaders, and changing teachers did not seem to affect first-year students' motivation in general. The chi square test supports the view that intrinsic motivation level is not related to the year specific context in the learning environment. During the years 2018-2020 none of the students were on a weak intrinsic motivation level and on the other hand, a third of the students exceeded an excellent level. These results reflect that the pedagogic concept of *Lion's Jaw* can be seen as a motivating, inspirational and successful, yet challenging, learning environment which confirms the first hypothesis. Its competitive setting does not seem to have significant impact on students' motivation. In retrospect, it is relatively safe to evaluate that tangible rewards for the winning team did not undermine other teams' motivation as competitive

contingencies tend to do (Ryan & Deci, 2017, p. 132). However, it is essential to bring up that students assumed higher motivation could be related to other factors such as start of the higher education studies and the first semester.

The learning environment has been developed yearly with students' feedback making it more student centered. Also working life orientation, genuine assignment (including given budget), project timetable, and not too serious competitive setting enables real working life experience for the students. Third-year students' roles as team leaders is significant and authentic leadership experience for them but also their role as mentors to the first-year students can be seen important. It is likely that they provide a lot of tacit knowledge (Nonaka & Takeuchi, 1995) in their team meetings helping the first-year students to adapt and commit to the higher education studies and objectives of the project. Also, third-year students were able to make use of their former experiences in *Lion's Jaw* and probably were driven to provide even better experience for the participants. It is likely that third-year students' roles in the project affected first-year students' motivation.

How the learning environment affected students' basic psychological needs satisfaction?

There were no significant differences between basic psychological needs in the years 2018-2020. Only slight differences occurred on basic psychological needs means (TABLE 2). In the years 2018-2020 perceived autonomy is on a higher level than perceived competence (mean 0,27-0,47 higher). According to CET, students' styles of self-regulation influence their intrinsic motivation which is dependent on experiences of autonomy and competence (Ryan & Deci, 2017, p. 157). It is understandable that students can feel less competent when involved in a new learning environment and with new learning objectives. They were studying new knowledge and skills in which most of them had little or no experiences before. The variation could also indicate that the learning environment has been changed a little more complex each year due to service design theory and framework that has been in use since 2019.

OIT suggests that the higher the internalization of regulations of culturally valued extrinsically motivated activities (e.g. studying), the more the perceived locus of causality (PLOC) will be internal. This enables students to experience autonomy in carrying out behavior. (Ryan & Deci, 2017, p. 182.) When looking at the explaining factors of the basic psychological needs (TABLE 1) the autonomy factors (BIP, OAPW, AWP) indicate that the students have had interest in the project yet they perceive that they have had limited possibilities to affect the project work (e.g. methods or

role). Women felt they had less freedom to express their opinions during the project than men. Learning environment demanded autonomous working and independent decision making which fluctuated among students. Men think that they were less able to achieve results independently than women.

The competence factors (DC, GD) bring up a view that the learning environment has enabled students to learn a lot of generic skills related to project work and higher education studies. Virtanen and Tynjälä (2018) propose that learning generic skills effectively requires learning environments that utilize methods encouraging students to process study contents, connect theory with practice, and collaborate with others. In this way, the learning environment could form an efficient context for learning generic skills needed in working life and supporting students' interest and motivation. Also, the learning environment seems safe for learning and students think that they have had opportunities to seek guidance, ask questions, and receive feedback.

Ryan and Deci (2017, p. 214) suggest that the need for relatedness is of central importance for internalization to occur. Greater internalization of extrinsic motivations can be facilitated by social contexts if the environment supports basic psychological needs. The relatedness factors (BTSTW, CPL, STA) supports a perception that the learning environment and team working in a project has been a new and rewarding experience for many of the students. There were differences between sexes as women perceived lower belonging to the teams and think that their teams could have succeeded better. Each year, first-year students have been satisfied with third-year students' competence in theory and practice. Importantly, it seems that third-year students have succeeded in creating a caring, equal, and safe atmosphere for teams though there was a difference between women and men on feeling how they were cared as team members when women's perceptions were lower.

The results could indicate integrated or the intrinsic regulation of behavior among students (hypothesis 2 confirmed) but also some introjected regulation could be seen. Nevertheless, it is likely that the learning environment of *Lion's Jaw* supports highly autonomous behavior in most of the students forming autonomy supportive environment. Also, according to BPNT, the basic psychological needs satisfactions of autonomy, competence and relatedness tend to relate positively to one another (Ryan & Deci, p. 107, 249). This perspective supports the results of the factors (TABLE 1; TABLE 2). Van der Broeck et al. (2016) argue that overall need satisfaction scale on the contrary to STD's conceptualization of the basic psychological needs as separate and non-

compensatory entities. This argument should be considered when interpreting IMLIPA results and means without reviewing each psychological need separate. However, this study and results enable the latter perspective and reviewing satisfaction of basic psychological needs as own entities.

How did the new measurement model (IMLIPA) work in the study context?

With the IMLIPA, measurement of basic psychological needs satisfaction was possible. The testing of the new measurement model IMLIPA showed that the indicators of basic psychological needs can be used as directive results of students' integrated regulation and intrinsic motivation. There were no significant differences between basic psychological needs which confirmed the third hypothesis. Evaluating the IMLIPA is related to validity and reliability of the study because the indicators for basic psychological needs were formed with sum and mean variables.

Statistical analyses indicated that the consistency of Cronbach's coefficient alpha in the factors of autonomy indicated a good level (0,837; 0,806) on two factors (BIP, OAPW) and acceptable level (0,772) on one factor (AWP). On competency factors the consistency was good (0,896; 0,880) on both factors (DC, GD). Considering relatedness, the consistency was high (0,963;0,938) on two factors (PTSTW, CPL) and good (0,886) on one factor (STA). Three formed factors of autonomy explained 63 % of the total variance, two factors of competence explained 54 % of the total variance, and three factors of relatedness explained 71 % of the total variance.

The Kaiser-Meyer-Olkin measure of sampling adequacy indicated 0,792 on autonomy, 0,902 on competence and 0,922 on relatedness. Bartlett's test of sphericity on all basic psychological needs indicated also that correlation matrix was proper for factor analyses ($p < 0.001$). Statistical analyses indicated reliability on factors formed from the survey. Comparisons between groups indicated no significant differences.

To validate the IMLIPA, testing should continue in different project-based learning environments that require team learning. Without more testing it is too early to assume that the measurement model is valid or make conclusions on its stability. For future research it would interesting to study specific teams and compare team leading and management effects on intrinsic motivation and basic psychological needs satisfaction. This might give more in depth knowledge on why some teams thrive and others tend to struggle. This approach is supported by recommendation by Van der Broeck et al. (2016) that SDT theory should be compared and integrated with management theories when studying work-based contexts.

CONCLUSIONS

Effects of a pedagogical concept in higher education students' intrinsic motivation

From educational perspective it is rational to design and pursue learning environments that take students' basic psychological needs into account. This study reflects that this specific learning environment recognized basic psychological needs satisfaction as a framework for students' learning design. This basis for design seems to lead in outcome where yearly variation in the learning environment does not seem to affect first-year students' motivation in general, though clear connection between the learning environment and measurement model can be seen as questionable.

Effects of a pedagogical concept in higher education students' intrinsic motivation can be reviewed through the basic psychological needs. *Lion's Jaw* has been designed as a collaborative learning environment which requires self-regulation of the students. Students were given a lot of opportunities to make decisions on their project work. Yet, they must have known that in need for assistance and guidance it was at hand. Supporting autonomy should not lead to the abandonment of the teams and individual students. Learning processes have been developed each year reflecting on previous years and modifying the balance of teacher-led, student-led, and independent learning and project working.

Without former experiences in a broad project work, team learning, and knowledge of service design perceptions of competence may have been quite low in the beginning. It was important to make sure that everyone had opportunities to contribute to the teamwork and make progress in learning objectives in authentic settings. In these settings, students have had opportunities to learn specific skills related to curriculum but also a lot of generic skills. These generic skills should be noticed alongside with specific skills in curriculum reform and up-coming writing of learning objectives. Self-assessment of generic skills might be tricky for students but identification on development in those skills increases competence and that way enables better motivation for studies.

First-year students have passed selection for university studies and are interested in sport and exercise, well-being and health in general. These general interests possibly bound them together. Within the *Lion's Jaw* students became familiar with service design which might be something that did not respond to their interests in the beginning. In this way, third-year students have had significant roles as team leaders in justifying, giving examples from their experiences, motivating,

and forming a team from the group of students. It can be assumed that third-year students' role has been remarkable when it comes to the perception of relatedness.

Implications for practice

Optimal learning environment supporting students' intrinsic motivation requires careful planning and defining students' freedoms and responsibilities in a project work. Team working and project-based learning could enable efficient learning of generic skills alongside with specific skills. More experienced students as team leaders could be a working method if students' roles are justified and in line with their studies and learning objectives. Teachers' roles as learning process owners and the method of team teaching enable broad and long-term projects. Project-based studies form a good learning environment in higher education and support implementation of UAS working life development task.

However, it is essential that there is enough time resource for implementing the project. Resources also require adequate amount of ECTS that are bound to the project. It is clear that one course of 5 ECTS does not support project-based learning in cooperation with working life. Individual courses that have no connection to another can lead to fragmented learning. This should be considered in curriculum implementation in Haaga-Helia UAS Degree Programme on Sport and Leisure Management starting in fall 2021 when designing authentic learning environments. Curriculum forms a dynamic framework that can respond to continuing working life changes or it can form strict boundaries where learning objectives are narrowed to knowledge and method-based objectives forgetting about the basis of competence-based education.

Limitations

In this study, cross-sectional study design was used. Researcher's role as a lecturer in studied learning environment should be acknowledged. Measurements considered perceived basic psychological needs and students evaluated these on a given time. It is obvious that there were fluctuations in motivation during the project, but these fluctuations might be more reasonable to study with qualitative methods (e.g. observation, discussions). However, every time a larger learning environment development survey was implemented participants did not know the content of basic psychological needs factors. For statistical analyses confirmatory factor analysis could have been suitable approach because hypothetical proposition matrixes were built for the basic psychological needs. Comparing means can be seen as a more directive way to make interpretations than generalized conclusions regarding the study population which was not possible in this context.

In general, there are so many other variables besides motivation connected to this kind of learning environment that it is quite hard to make valid conclusions based on solely the measurements made in this study.

REFERENCES

- Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van der Kaap-Deeder, J., ... Verstuyf, J. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion*, 39, 216–236.
- Deci, E. L. (1975). *Intrinsic motivation*. Plenum Press.
- Deci, E. L. (1980). *The psychology of self-determination*. Lexington Books.
- Deci, E. L., & Ryan, R. M. (2000). The “What” and “Why” of Goal Pursuits: Human Needs and the Self-Determination of Behavior. *Psychological Inquiry*, 11(4), 227–268.
- Deci, E., & Ryan, R. (2008). Facilitating optimal motivation and psychological well-being across life’s domains. *Canadian Psychology*, 49, 14–23.
- Everaert, P., Opdecam, E., & Maussen, S. (2017). The relationship between motivation, learning approaches, academic performance and time spent. *Accounting Education*, 26(1), 78–107. <https://doi.org/10.1080/09639284.2016.1274911>
- Gagné, M. (2003). The role of autonomy support and autonomy orientation in prosocial behavior engagement. *Motivation and Emotion*, 27(3), 199–223. <https://doi.org/10.1023/A:1025007614869>
- Grant, A. M., Nurmohamed, S., Ashford, S. J., & Dekas, K. (2011). The performance implications of ambivalent initiative: The interplay of autonomous and controlled motivations. *Organizational Behavior and Human Decision Processes*, 116(2), 241–251. <https://doi.org/10.1016/j.obhdp.2011.03.004>
- Koestner, R., & Losier, G. F. (2002). Distinguishing three ways of being highly motivated: A closer look at introjection, identification, and intrinsic motivation. In E. L. Deci, & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 101–121). University of Rochester Press.
- Lehmusto, T. (2018a, November 27). Opiskelija on johtaja – case Leijonankita. *eSignals*. <https://esignals.fi/2018/11/27/opiskelija-on-johtaja-case-leijonankita/#744bb7a4>
- Lehmusto, T. (2018b, December 11). Palautteen päivä – case Leijonankita. *eSignals*. <https://esignals.fi/2018/12/11/palautteen-paiva-case-leijonankita/#744bb7a4>
- Lehmusto, T. (2018c, December 18). Kipinä itseohjautuvuudelle – case Leijonankita. *eSignals*. <https://esignals.fi/2018/12/18/kipina-itseohjautuvuudelle-case-leijonankita/#744bb7a4>
- Lehmusto, T. (2019, March 21). Z-sukupolvi ja johtaminen – case Leijonankita. *eSignals*. <https://esignals.fi/2019/03/21/z-sukupolvi-ja-johtaminen-opiskeluprojektissa/#744bb7a4>
- Martela, F., & Jarenko, K. (2014). *Sisäinen motivaatio: Tulevaisuuden työssä tuottavuus ja innostus kohtaavat*. Eduskunnan tulevaisuusvaliokunnan julkaisu 3/2014. https://www.eduskunta.fi/FI/naineduskuntatoimii/julkaisut/Documents/tuvj_3+2014.pdf
- Martela, F., Jarenko, K., & Järvillehto, L. (2015). *Draivi: Voiko sisäistä motivaatiota johtaa?* Talentum.

- Martela, F., Ryan, R., & Ryan, R. M. (2016). The Benefits of Benevolence: Basic Psychological Needs, Beneficence, and the Enhancement of Well-Being. *Journal of Personality*, 84(6), 750–764.
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. Oxford University Press.
- Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology*, 43(3), 450–461.
- Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. The Guilford Press.
- Ryan, R. M., Mimus, V., & Koestner, R. (1983). Relation of reward contingency and interpersonal context to intrinsic motivation: A review and test using cognitive evaluation theory. *Journal of Personality and Social Psychology*, 45(4), 736–750.
- Sheldon, K. M., & Niemiec, C. P. (2006). It's not just the amount that counts: Balanced need satisfaction also affects well-being. *Journal of Personality and Social Psychology*, 91(2), 331–341. <https://doi.org/10.1037/0022-3514.91.2.331>
- Van den Broeck, A., Ferris, D. L., Chang, C., & Rosen C. C. (2016). A Review of Self-Determination Theory's Basic Psychological Needs at Work. *Journal of Management*, 42(5), 1195–1229. <https://doi.org/10.1177/0149206316632058>
- Vansteenkiste, M., Lens, W., & Deci, E. L. (2006). Intrinsic versus extrinsic goal contents in self-determination theory: Another look at the quality of academic motivation. *Educational Psychologist*, 41(1), 19–31.
- Vansteenkiste, M., & Ryan, R. M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration*, 23(3), 263–280.
- Virtanen, A., & Tynjälä, P. (2018). Factors explaining the learning of generic skills: a study of university students' experiences. *Teaching in Higher Education*, 24(7), 880–894. <https://doi.org/10.1080/13562517.2018.1515195>.
- Wreznesniewski, A., Schwartz, B., Cong, X., Kane, M., Omar, A., & Kolditz, T. (2014). Multiple types of motivates don't multiply the motivation of West Point cadets. *Proceedings of the National Academy of Sciences*, 111(30), 10990–10995.