

SUMMARIES

Scholarly Teaching

Alar Kilp

Academic activities are recognized by three characteristic traits. First, they are *public*, which means that they are accessible throughout the world for all members of the professional community who are studying the same phenomenon or are engaged with the same professional work. Second, they are *peer-reviewed* by colleagues from the same professional community. Third, they are *usable* for all professional colleagues for distribution, citation, application, development, disputation and refutation.

The article uses the metaphor of a ladder for discussing the professional development of teaching in a university. It identifies five levels in the development of the expertise of teaching: 1. The practical knowledge attained from individual teaching experience; 2. The teaching-related knowledge attained and shared during discussions with colleagues; 3. The “learning of teaching” in pedagogical courses for university teachers; 4. Teaching based on the scholarship of teaching and learning (SoTL); 5. Academic teaching which results in studies and contributions to the disciplinary knowledge of teaching and learning. Proper academic teaching takes place only on the two highest levels of the ladder.

University teachers who have started teaching without pedagogical preparation can develop their professional teaching expertise by moving toward higher levels of the ladder. Unlike ladders in the physical world, on the higher levels of this ladder teachers keep doing the activities they did or started to do on the lower levels.

Without exception, all academic teachers need to be experts in the substantive knowledge of the content. However, scientific expertise in itself is not sufficient for scholarly teaching. The scholarly teacher needs to have three types of competences: 1. Substantial knowledge of the domain and theme; 2. Basic pedagogical knowledge; 3. Pedagogical content knowledge, which combines the first two competences according to the particularities resulting from institutional context, characteristics of the study group, etc.

Teaching and learning always take place within the institutional context. Until recently, probably the majority of teachers in Estonian universities teach non-academically. However, developments in European higher education seem unequivocally to be heading towards two career-paths for university

teachers. Those who focused their expertise and career mostly on teaching are expected to start practicing and producing the scholarship of teaching and learning, which has become a new and universal basis whereby the quality of teaching is being assessed. The scholarship of teaching and learning is expected from those who are not doing academic research in a conventional sense. Those who pursue the research-based path of an academic career are expected to obtain the basic knowledge of scholarly teaching and to be able to explain the key elements of their teaching practice on the basis of disciplinary and pedagogical scholarly literature. Therefore, there ought to be enough incentives for all university teachers to consider teaching a scholarly activity and to practice it in a scholarly way as well.

Keeleliste vormelite omandamise osatähtsus suhtluspädevuse ja õppuri autonoomia arendamisel

Katri Sirkel

Sõnavarapädevus on hea võõrkeeleoskuse alus, mis ei piirdu ainult üksikute sõnade tundmise ja kasutamisega, vaid kätkeb endas ka keeleliste vormelite ja sõnaühendite kasutamise oskust eri kõnesituatsioonides. Uurimuse eesmärk oli analüüsida Kaitseväge Ühendatud Õppeasutuste (KVÜÕA) B1 taseme inglise keele õppurite keelevormelite kasutamisel esinevaid probleeme ja pakkuda välja lahendusi vormelite paremaks omandamiseks. Uurimus põhines KVÜÕA taseme- ja täiendusõppurite B1 taseme inglise keele kursuste vaatlusel aastatel 2015–2016. Uurimuses ilmnes, et põhiliseks vormelite omandamist ja kasutamist takistavaks asjaoluks on probleemid leksikaalsete ühendite äratundmisega kõnes ja kirjas. Samuti esines raskusi etteantud vormelite kasutamisega kontekstis. Soodustamaks keelevormelite omandamist ja kasutamist, tuleks arendada õppurite metalingvistilisi oskusi, mis aitaksid kaasa mitmesõnalise üksuse kui funktsionaalse terviku hoomamisele ning looksid eeltingimused tõhusamaks iseseisvaks keeleoskuse ja sõnavara arendamiseks.

Student and Teacher Meet in the 21st Century School

Aigi Piirimees, Maia Boltovsky

More and more schools and universities are adopting the principles of UDL (Universal Design for Learning), which involve providing multiple means of representation (the “what” of learning), providing multiple means of action and expression (the “how” of learning), and providing multiple means of engagement (the “why” of learning). This has led to a need for change in the study process in the ENDC. Students should be given more autonomy and new ways of integrating different subjects should be found.

This article gives an overview of the changes made in foreign language instruction in the ENDC. It is based on the experience of teaching English to cadets and Master students and aims at setting a solid foundation for efficient language learning to help officers cope in everyday situations in their future career. The study focuses on the 2015–2016 academic year when the number of independent study hours was increased. This change resulted in the need to design the study process in a manner that might enable students to acquire the necessary knowledge and skills through fewer contact hours and more independent work, which meant developing student responsibility and autonomy. Helping foreign language learners to become autonomous is one of the most fundamental duties of foreign language teachers. There are two general arguments in favour of trying to make learners autonomous. Firstly, if they are reflectively engaged with their learning, it is likely to be more efficient and effective. Secondly, if learners are more proactively committed to their learning, they do not have problems with motivation and become life-long learners as well.

The study, which was mainly based on observation and self-reflection, found that although students are ready to take responsibility for their own learning and are moving towards greater autonomy, they still need guidance from their teachers. This also requires a change in the teacher’s mindset. Teachers should relinquish their dominant role and trust students more, focusing rather on creating student-centred learning environments that have been shown to be effective in higher education. Whether the teachers are ready for the change or not requires further study. However, based on their own experience, the authors encourage teachers to introduce changes in their teaching practices which would support active learning and guide students towards becoming self-directed learners.

Experiences in Applying Significant Learning Taxonomy in 112 Call Takers' Training

Stella Polikarpus, Katrin Poom-Valickis

The article focuses on the problem of how to increase 112 call taker students' involvement in the learning process and to create significant learning experiences. The goal of the current study is to create and implement a didactic model for the theme of chemical incidents based on significant learning taxonomy¹ that helps to improve 112 call takers' professional competence.

The study was conducted with design-based research, which combines five phases of the non-linear ADDIE model² (i.e. Analysis, Design, Development, Implementation and Evaluation) with 12 steps of integrated course design³. The research task for the first stage was to analyse the training carried out so far and the new demands for call takers' curriculum. The task for the design phase was to plan the didactic model for the topic of chemical incidents based on significant learning taxonomy⁴. In the third phase the model was developed and teaching methods and materials along with evaluation methods were improved. The didactic model was piloted in the academic year of 2014/2015 in a vocational education course in the Estonian Academy of Security Sciences (EASS) and data was collected. Evaluation of the didactic model was carried out in the fifth phase in spring 2015. Different data collection methods were used for the evaluation of the model, e.g. questionnaire, observations and assessment results of the 30 students enrolled in the courses. The didactic model was used again in the autumn semesters of the academic years 2015/2016 and 2016/2017.

The outcome of the design-based research is a didactic model for teaching chemical incidents call handling that is based on significant learning model and supports the necessary professional skills, key-competences and student involvement in the learning process. The assignments, evaluation tools and teaching materials compiled within the design-based research are applied in practice. The didactic model itself could be used to develop other curriculums

¹ **Fink, D.** 2013. *Creating Significant Learning Experiences, Revised and Updated. An Integrated Approach to Designing College Courses.* San Francisco: John Wiley & Sons..

² **Department of the Army.** 2011. *Army Learning Policy and Systems.* TRADOC Regulation 350–70. <<http://www.tradoc.army.mil/tpubs/regs/TR350-70.pdf>> (05.01.2017)

³ **Fink** 2003.

⁴ **Fink** 2003.

and improve the efficiency of teaching other topics of the researched curriculum and other higher-education and vocational training curriculums.

The main suggestions for improving curriculum and teaching are: 1) use significant learning taxonomy for phrasing learning outcomes; 2) develop the implementation timeline and planning forms for the new model that support greater integration of learning outcomes, feedback and assessment methods and teaching learning methods; 3) identification and use of certain topics in a curriculum as an integration theme between different modules; 4) change the assessment method to problem-based assessment and use e-learning environment for assessment; 5) develop e-learning materials and enhance cooperation between teachers.

The Effectiveness of Blended Learning Among Dental Students

Riina Runnel

The students of the current generation differ from previous generations by their academic skills and approach to learning; they expect more personalized teaching, support and help from both fellow students as well as from the lecturers. They set their own goals, expect flexible schedules and deadlines, and are using digital technology and IT solutions to help them with that.

The aim of this study was to assess the suitability of blended learning (face-to-face learning combined with web-based assignments and independent work) in dentistry. Various online surveys and a thematic analysis of the answers were used to gather information.

As expected, most of the students found the form of study suitable, though not all. The main sources of discontent were group assignments (different sizes of groups, passive group members), study material standards (at times too basic or previously learned) and the use of new methods (pre- and post-tests). The main benefits were clear organization and variety of the coursework. The students also valued the discussions that emerged during lectures and group assignments, the environment supporting discussion and debate, the flexibility of the deadlines for individual work and reminders sent by the lecturers.

Blended learning suits the new, digital-native generation of students – e-learning allows for variety and effectiveness in tasks and assignments, the use of different study methods and catering for students with a variety of learning styles.

“All Together Now?": Possibilities for Assessment in Creative Group Work for Self-directed Learners

Marit Mõistlik-Tamm, Gerhard Lock

This article offers a solution strategy based on assessment possibilities for self-directed learners, focusing on interdisciplinary inspiration-based creative group work carried out at Tallinn University by the authors in the form of the course “Musical co-creation practicum”. In this article we present the strengths and challenges of developing a group work-based course from the teacher’s perspective, provide a more detailed overview of the applied assessment system, present its innovation in the field of music, and share student feedback about the experience and lessons learned during the course.

Creative group work or co-creation is naturally interdisciplinary, because among other sources of inspiration, there are also non-music impulses (colors, shapes, words). We approach this from the viewpoint of problem-based learning, the aim being to direct the learner to discover and solve problems independently. Therefore, the central problem question of this course has been how to use non-music inspiration sources to achieve musical co-creation with an authentic outcome (Concert-Exam). The discovery of problems is among the first steps of a number of phase and stage models of creativity.

The authors used these five steps to approach musical co-creation: (1) exploring the environment and everyday sounds, (2) experiencing colors, shapes and words, (3) creating a graphic score⁵, (4) translating the score into music, (5) recording and reflecting the final performance.

Interdisciplinarity, composition and improvisation in the context of curriculum. Despite the fact that interdisciplinarity within the arts has existed naturally (and at different levels) for a long time already, in arts education it has been left rather undeveloped so far, with each art field remaining rather conservative and independent. This has its own reasons: true proficiency can be achieved only through focusing deeply on one field. However, since the education landscape has changed internationally, especially with the internet and digital technology age, changes have also come to Estonia, more specifically at Tallinn University BFM with the BA curriculum Integrated Art, Music and Multimedia started in Autumn 2016 (the authors of this article are involved in its development).

⁵ Prescriptive guide for musicians in a similar function like traditional musical notation.

The roles of the self-directed learner and the teacher in the context of thinking and cognitive styles. It is important to understand that a self-directed learner does not act in isolation in the learning process; he/she is influenced also by the teacher who can support or preclude this development. This appears to be especially important in the co-creation group context. Here we refer to Grow's Staged Self-Directed Learning (SSDL) model with four learner (learning stages) and four teacher (teaching style) types as theoretical background (see Example 1 in the article). By understanding the differences in thinking and cognitive styles of teachers and learners, the teacher is enabled to vary the teaching tools, which, in turn, allows the learner to manage the tasks given without being hindered by his/her dominant thinking style.

Assessment criteria and strategies for group work are crucial – how should the contribution of each individual member to the co-creation be assessed? The following outlines our experience in four steps: (1) *Preparatory homework*, which aims to create a reference system and to generate ideas for the next practicum's group work; (2) *Practical workshop* (practicum) based on the previous homework; (3) *Video recording of the co-creation* (performances of separate practicums or the whole as Concert-Exam), which is designed to confirm the co-creative group work task; (4) *Written feedback*, which is designed to reflect the longer process and its outcome, including video recordings to refresh one's memory.

Student feedback pointed out that some of the homework took more time to do because of the unfamiliarity of the task. There were students who would like to have more limits, but also those who thought that the homework guidelines were too rigid and wanted more freedom. A group of six members was regarded as generally satisfactory, but students pointed out the fact that not all six were always present at the same time, and some mentioned that more members would have meant greater diversity, which was lacking sometimes. On one hand, there were those who wanted less interventions by the teachers and also to remain in the creative process longer. On the other hand, there were those who overcame (creative) difficulties more easily with the consulting presence of the teachers. Group work as a form of learning and creating music (using also non-music inspirational sources) was seen as an opportunity to discover new sides of their fellow musician-students.

Finally, the authors want to highlight that although the group (collective, collaborative) work form in music is very common (in ensembles, choirs, orchestras), the newness of the assessment criteria offered in this article is meant to conjoin composition and improvisation as co-creation as well as problem- and interdisciplinary impulse-based group improvisation as an

extraordinary experience which, despite the difficulties, can be assessed and graded individually.

From the teacher's perspective, developing such a course together with assessment criteria requires intensive work involving various aspects. On the other hand, it is highly rewarded by enabling an outstanding experience for the learners in different fields: the creative process is enriched by inspiration from several art fields (individual ideas and co-creativity), communication in the group and supporting each others' creative self-expression, problem-based learning and management, learning from each other (learning by teaching⁶), result directed time management, work proof technical solutions, successful planning and realizing (performing) of the whole result (Concert-Exam⁷). It is important to understand that no person is born as a self-directed learner but develops into one, and therefore it is necessary to keep one's strategies open in this developmental process, where teaching of such learners (including assessing creative group work) takes place.

Continuity in Engineering Studies

Mario Mäeots, Jaak Umborg

High dropout rates in engineering studies are an issue that higher education is still struggling with. Several studies have been conducted that report different potential reasons and solutions concerning the problem of dropout. For example, a study carried out among engineering students by the Estonian Aviation Academy showed low levels of knowledge and skills related to exact sciences and low levels of technical skills to be the first indication of the risk of dropping out as early as in the first year of studies. This shows that continuity between secondary education and higher education is interrupted, which is why obtaining new knowledge and skills may be too challenging for the student. In order to minimize or avoid such challenges or obstacles, it is important to ensure unbroken continuity between secondary education and higher education.

⁶ Grzega, J.; Schöner, M. 2008. The didactic model LdL (Lernen durch Lehren) as a model of preparing students for knowledge societies. – Journal of Education for Teaching (JET) 34, pp. 167–175. <<http://www.joachim-grzega.de/GrzegaSchoener-LdL.pdf>>.

⁷ This is a video with comments of year 2016 concert-exam: **Muusikalise ühisloome praktikum: KONTsert-EKSAM // CONCERT-EXAM**. <<https://youtu.be/Ulbu5wl8fQQ>> (03.06.2016).

In this paper we make and describe recommendations that support ensuring continuity in engineering studies. As a first recommendation, we find it crucial to increase collaboration between higher education (proficiency related subjects) and secondary education teachers (mainly mathematics and physics teachers). This fosters a common understanding of what expectations are set for students in upper secondary school and what is expected from them during engineering studies. It is also important to know not only what is learnt in upper secondary school but what teaching methods are implemented in exact science related subjects. During the curriculum reforms in Estonia more emphasis has been put on applying inquiry-based learning methods in teaching science and exact science related subjects in basic and upper secondary school. Additionally, supportive materials for teachers and curriculum descriptions encourage teachers to support students' self-regulation. This is supported by the literature, which states that learning is more efficient when students control their own learning. Self-regulation relies on planning, monitoring and evaluating the learning process. The second recommendation for supporting continuity is to embed inquiry-based learning and self-regulation related activities in engineering courses. The third recommendation is related to the development process of learning materials for first-year engineering students, as the materials should consider what is taught in upper secondary school.

In conclusion, we need to create conditions for students to experience a smooth transition from secondary education to higher education. Contribution by all teachers and students could help achieve the required continuity.

**Use of Smart Devices for Learning:
Experience, Perceptions and Proposals of the Basic
Course Cadets of the Estonian National Defence College**

Triinu Soomere, Liina Lepp, Marvi Remmik, Äli Leijen

Digital competence and the use of innovative technological tools in education have become important key words in educational policy in both Estonia as well as the European Union. The purpose of the study was to determine Basic Officer Course cadets' experience and perceptions of using smart devices for learning and proposals for using smart devices for teaching and learning in the Estonian National Defence College (ENDC). The qualitative research method was used. Data was gathered through semi-structured interviews

with 10 ENDC Basic Course cadets and analyzed using the qualitative thematic data analysis method. The results demonstrated that cadets had the most experience with learning with smart devices in connection to formal education and mostly described their experience as positive. Cadets' perceptions about learning with smart devices were diverse: while some considered it useful, others thought it was impractical or distracting from the learning process. Generally cadets held the belief that smart devices were suitable for younger and self-directed people. Cadets suggested that smart devices should not be banned in the ENDC to allow the necessary flexibility in learning. Cadets made several proposals for using smart devices in the ENDC.

Teacher Training Students' Views on Academic Dishonesty, Causes of it and Options for Reduction

Merili Raudmäe, Marvi Remmik, Liina Lepp, Liana Roos

The aim of this study is to explain the personal philosophy and understandings of students about academic dishonesty. In the theoretical part of the thesis, academic integrity is described generally based on a number of different authors. Students' perceptions of academic integrity and the role of the faculty member in academic dishonesty prevention and detection, according to several different authors, are also explained in the theoretical part. The study indicates that the students are aware of this problem and understand the severity of it, but there are also students who do not have an opinion about the subject or they have not had any experience with questions of academic integrity.

The research was carried out using the qualitative method. The research is based on semi-structured interviews with 26 teacher training students. Thematic data analysis was used, which makes it possible to obtain a detailed overview of the gathered data.

The conclusions of the research showed that most of the students are aware of academic dishonesty and consider it a serious problem. Cheating and plagiarizing were listed as the main modes of academic dishonesty, while inability to plan time and laziness were said to be the primary reasons for it. In addition, students mentioned that academic dishonesty is made possible by the professors' lack of attention, which gives students an opportunity. Also students with different ethnic origin are more likely to be involved in academic dishonesty than Estonians. Some methods for reducing cases of

academic dishonesty were mentioned, for example, placing video cameras in the classrooms and increasing students' learning motivation.

The practical value of the current study lies in its results, which can be used to prevent academic dishonesty in higher education institutions. The study provides information about students' knowledge of academic dishonesty in general, the reasons behind it, and the solutions that students themselves suggest for preventing future cases. Based on the information obtained from the study, the spread of academic dishonesty could be reduced. However, this topic needs further research. For instance, one option would be to study lecturers' opinions on the topic, their teaching practices, and conceptions of academic dishonesty. Moreover, the way lecturers plan their activities and the measures they take to avoid academic dishonesty in higher education institutions could also be studied.

In conclusion, it can be said that academic dishonesty is a problem, but there are different ways to reduce it.

The Development and Implementation of a Collegial Peer Review Model at the University of Tartu

Mari Karm, Ene Voolaid, Anu Sarv, Taavi Vaikjärv

Peer review of teaching is one possible way for university teachers to learn and develop. The purpose of it is to improve the quality of teaching, broaden teachers' understanding of the learning process, complement their repertoire of teaching methods and develop teachers' self-evaluation and reflection skills. At the same time, there is some hesitance among teachers regarding participation in collegial peer review, as the process may involve several risks, for example, insufficient preparation of participants, breach of confidentiality and a leak of observation notes. Several models can be used for peer review of teaching. At the University of Tartu, the model is applied where peer observations are integrated within the activities of the community of practice and academic developers are involved in the peer review process.

The present paper introduces the model of peer review that is applied at the University of Tartu and the operation of this model is analysed by means of action research. The research is based on academic developers' observation log notes and on focus group interviews with academic developers, with the resulting texts being analysed thematically. The article focuses on the following questions:

- How do academic developers describe the functioning of the model of peer review used at the University of Tartu?
- How do academic developers describe their role in the process of peer review?
- What problems do academic developers face in the process of peer review?

The results show that, according to the descriptions of academic developers, the peer review model used by the University of Tartu supports the professional development of the university teachers, as the peer observations and the meetings of the community of practice focus on the themes directly related to learning and teaching, such as learning from colleagues, creating links between the observations and community (of practice) meetings, understanding of the structure of the study process as a whole and of teaching concepts. In the work of the academic developer it is important to find a balance between support and pressure, as one needs to encourage colleagues to share their experience and to support the development of their reflection skills. While applying the peer review model at the University of Tartu, the academic developers have experienced difficulties in changing the organizational attitude towards the support of the university teachers' learning and in keeping the process of peer review sustainable.

Mental Model Enhancement via Multimodal Communication Methods: Benefit for Self-directed Learner

Silvi Tenjes

The article deals with the enhancement of the structures of mental models, i.e. of knowledge, of military leaders via the analysis and learning of components of multimodal communication. An overview of previous research concerns military leaders in interaction, mental models, dialogue and multi-party communication. The theoretical part of the article introduces the concepts of and approaches to mental representations and models and outlines the most recent positions from brain research and the definitions and research methods of multimodal communication.

The term *mental representations* signifies the way information is stored in an individual's mind – in words, pictures, abstract connections or some other way. Mental representations may occur in three different forms: propositions

(totally abstract and verbally expressible), mental models (*knowledge structures* in various potential shapes and at different levels of perfection that an individual has built based on the existing knowledge and theories and that are therefore subjective) and mental images (somewhat more specific representations retaining many of the perceivable features of the objects and of the details of a particular situation).

Multimodal communication is communication involving more than two sensory modalities. The resources of the human body that produce information for different sensory modalities are motor, or production, modalities. Thus, gestures may produce information for visual modality and speech organs phonemes for auditory modality. Multimodal means of communication are considered to be prosody, speech, hand gestures, artefacts, facial expressions, body postures and eye gaze direction.

The objective of the research was to identify, by means of observation and video data microanalysis, the components of verbal and non-verbal communication in officers and non-commissioned officers, and to evaluate their use in public performance and communication.

The data comprises lessons for officers and non-commissioned officers recorded in an auditorium using a single camcorder. The non-commissioned officers were recorded in a written and oral self-expression course and the officers during a leadership course. A total of 59 non-commissioned officers participated in the self-expression course and 10 officers attended the leadership course.

The video data analysis is based on the qualitative microethnography and communication ethnography method, which is rooted in the qualitative microanalysis method, i.e. the particular video clips under analysis are viewed repeatedly and thoroughly. The learning and analysis of public performance and communication was based on multimodal means of communication. Consideration was given to the classification of communication modalities according to I. Poggi⁸ (see also Annex 2): head movements, facial expressions, hand gestures, body posture, voice volume, smile or absence thereof.

The non-commissioned officers delivered a previously prepared written report in a two-minute speech to their colleagues in the auditorium (total

⁸ **Poggi, I.** 2002. Towards the Alphabet and the Lexicon of Gesture, Gaze and Touch. – Multimodality of Human Communication. Theories, Problems and Applications. Eds. by P. Bouissac. University of Toronto, Victoria College, May 3–5, 2002. Virtual Symposium 2001–2002. <<http://www.semioticon.com/virtuals/talks/geyboui41.pdf>> (12.08.2015).

duration of data 1 h 38 min 16 sec). Use of notes during the speech was permitted – thus complementing the performance context with an artefact and manipulation thereof. The officers presented role plays prepared by their instructor (three dialogues and one multi-party communication situation, total duration of data 48 min 12 sec).

The non-commissioned officers previously perused Poggi's classification of communication modes as an independent study assignment, and after the first analyses by the teacher at the seminar of analysis and feedback started to also analyse the videos presented. The officers acquired knowledge during the course of collective analysis but were also driven by the desire to analyse their fellow students after the latter had just analysed them.

The preliminary results of the two-level analysis of the research provide information on the ways of replenishing the knowledge structure, which are individual activities and related also to self-direction. The theoretical framework used in the article connects cognitive and sign theory studies (C. S. Peirce) with mental representations and models:

- 1) learning to know multimodal means of communication, the motor part of which being basically iconic and/or indexical and the linguistic part providing a symbolic presentation;
- 2) learning to present the corresponding modalities, being aware that they were seen and heard by the fellow students and the instructor (conveying the meaning);
- 3) learning to cognitively receive and understand the modalities presented (understanding the meaning).

The connection with the mental models consists – by the definition – in the perception enhancement and linguistic comprehension of the officers and non-commissioned officers (enhancement of the knowledge structure). Another finding from this research is related to reflection, or analysis, which yields representation on the mental level (is individual).

Mental models as knowledge structures can be developed by the learner himself. What is retained in one's head (what the brain forms) is up to one-self; however, it is compiled by receiving the production modalities of the participants in a communication situation involving the learner and using the learner's own activity of sensory modalities, i.e. his perceptions.

Dropout From Higher Education in the Context of the Self-determination of Students

Olev Must, Aasa Must

Students dropping out of higher education is a worldwide occurrence. The leading integration theory (Tinto 1993) posits that dropping out of higher education is indicative of weak academic integration with the university. The aim of the current research is to examine the dropout rate among Estonian universities and colleges based on Tinto's theory. The sample used for our survey consisted of 2250 students. These students had either exmatriculated from their studies within a year, or were taking advantage of their right to an academic free year. The most important finding was that the leading cause of dropping out could be attributed to weak emotional ties with the curriculum and university. This shows that there is lack of integration. Nevertheless, most students who dropped out were still able to pursue alternative means of studies, or were able to find other job possibilities, or undertook new challenges in their personal life. Dropping out was not necessarily a tragedy for the students. The motives for dropping out cohered with the self-determination theory (Deci & Ryan 1985). Students who dropped out were often able to find new perspectives, and were able to adapt to their situation and reorganize their life accordingly. Our findings demonstrate that a student's subjective integration with the university is very important. However, the results also show that the termination of studies does not necessarily cause a crisis, but can rather inaugurate a new experience in self-determination.

Developing Principles of Outcome-based Education Based on the Basic Rifle Marksmanship Training Syllabus

Allar Eesmaa, Svetlana Ganina

Conscription and the reserve army is one way the Estonian Defence Forces guarantees national military protection. Therefore, the conscript and the efficiency of his training play a crucial role in preparing for the enforcement of defence related tasks of national importance. General Knud Bartels said in Kosovo that basic skills, weapon handling, shooting skills and first aid skills are the most important skills for a soldier. Effective use of small arms and equipment is a prerequisite for successful combat.

As there is currently no common ground document (syllabus) for basic rifle marksmanship training, there is inconsistency between rifle and shooting training provided by the Estonian Defence Forces and the Estonian Defence League. Learning materials for rifle training and shooting exercises do not cover live fire exercise skills, which are of critical and major importance for a shooter. The shooting skills level has been previously addressed in the theses of the Estonian National Defence College Military Academy. The papers brought out that the shooting skills level in both the Defence Forces and the Defence League remains low and needs to be improved. Feedback from live fire exercises of the Battle School point to weak weapon handling skills and low hit rate (one in 10 shots hit a stationary target) among shooters. The Military Intelligence Battalion (today the Estonian Special Operations Force) in its presentation to the Commander of the Defence Forces on the state of play in shooting training indicated that the current shooting training and personal equipment do not provide sufficient support for the combat efficiency of soldiers. In order to improve the present situation and further develop shooting training, a special staff officer was employed in the Training Department (J7) of the Headquarters of the Estonian Defence Forces. Due to insufficient human and time resources, however, improvements in the shooting training have not been fast enough.

The aim of this study is to develop a syllabus for basic rifle marksmanship training and evaluate the efficiency of its implementation. The paper includes an analysis of the efficiency of the basic rifle marksmanship training (analysis of both the Syllabus as well as its learning outcomes) and suggestions on the implementation of the work and for further research. The research paper does not reflect on the study methods nor study content used in specific classes. The efficiency of the above-mentioned aspects would need to be studied in future research.

The research has been prepared in close cooperation with the Training Department of the Headquarters of the Defence Forces to improve the overall weapon handling and shooting skills of the Estonian Defence Forces and the Defence League.

During the first phase of the research, a working group was formed who also set the final goal – namely, after completing the Syllabus, the learner is familiar enough with safe, efficient and tactically proper weapon handling practices to take skilful action as a unit member during live fire and field exercises.

For the assessment of skills level, a number of Estonian and international research papers on shooting skills were examined. Right sight picture, stable

shooting position, breath control and trigger pressing technique have been identified as the basic skills of a shooter. In addition, shooting skills tests of special military units of the Estonian Defence Forces, Estonian Police and Border Guard Board from the United States, the United Kingdom, Finland, Poland and Germany were studied. Finally a list of 21 skills that a shooter must have obtained before taking part in a live fire exercise was compiled.

On the basis of selected skills, the following four learning outcomes were defined:

1. Handles a weapon with safety in every situation;
2. Applies the principles of tactical weapon handling;
3. Hits the target quickly and with precision in different situations;
4. Reflects on (analyses, reasons) his own weapon handling skills.

Assessment criteria were developed from the learning outcomes. Subsequently, the criteria were grouped into three tests. Test 1 is about weapon handling and gun safety. Test 2 is used for the formative assessment of weapon handling and shooting skills. Most important, however, is the evaluation of Test 3 as it measures all the above-named four skills and assesses the soldier's readiness for live fire exercises. All tests were subjected to validation and pilot tests were carried out in various subunits of the Defence Forces. After feedback assessment, corrections were made to the Syllabus. Subsequently, the Syllabus project was developed and subjected to validation and pilot tests among active servicemen of the Kuperjanov Infantry Battalion (21 participants) and officers of the Non-commissioned Officers' School of the Estonian National Defence College (63 participants). Again, feedback was analysed and further corrections made to the Curriculum. Next, the Syllabus was tested among two groups (Test Group and Control Group) of main draft conscripts of the Kuperjanov Infantry Battalion. Conscripts in the Control Group (130 shooters) were taught using the existing weapon handling and shooting training curriculum while conscripts in the Test Group (150 shooters) followed the newly developed Syllabus. Learning outcomes of the two groups were compared against Test 3 results, as the test measures all the above-mentioned four learning outcomes (safety, accuracy of fire, efficiency and self-reflection). Following the testing, the Syllabus was assessed against the following four assessment criteria: results of the final evaluation, feedback from shooters, feedback from instructors, and classroom observation summary. Ultimately, suggestions for future research and on the implementation of the new Syllabus were made.

The potential impact of group membership on soldiers' weapon handling skills, conforming to the four learning outcomes, was controlled with a chi square test. It emerged that the group membership has impact on safe ($p=6,6*10^{-5}$ ($\chi^2 = 15,90$, $df = 1$, $p < 0,001$)) and efficient ($p=3,4*10^{-11}$ ($\chi^2 = 43,95$, $df = 1$, $p < 0,001$)) weapon handling but not on the accuracy of fire (test 3 result; $p=1,0*10^{-2}$ ($\chi^2 = 6,58$, $df = 1$, $p > 0,001$); also existing shooting skills test showed that there is no difference in accuracy ($p=1,7*10^{-2}$ ($\chi^2 = 5,69$, $df = 1$, $p > 0,001$)). The fourth learning outcome (self-reflection) could not be assessed in the current paper as it came out during the classroom observation that instructors did not bring out the self-reflection aspect during Test 3. As a result, the self-reflection requirement was added to the Test 3 assessment guide. Considering that the shooters in the Control Group reflected upon their own performance, it could be assumed that the Test Group would have done that as well.

In view of the above information, it is possible to claim that in comparison to the current firearms and shooting training, studying under the new Basic Rifle Marksmanship Training Syllabus creates conditions for safer and more efficient weapon handling. Therefore, the proposed Syllabus provides better support to the shooters' skills development than the existing study programme.

In order to evaluate the functioning of the new programme as a whole, the following four aspects were considered: learning outcomes, feedback from students, feedback from instructors and classroom observation summary.

From the analysis of the four core elements (learning outcome, feedback from students, feedback from instructors and classroom observation summary) on the functioning of the programme, it is possible to conclude that studying under the new Basic Rifle Marksmanship Training Syllabus is more efficient in equipping the shooter with proper weapon handling skills during live fire exercises than following the current Curriculum.

The results received demonstrated that the Basic Rifle Marksmanship Training Syllabus is well-functioning and that the final evaluation (Test 3) is appropriate for assessing a student's attainment of the learning outcomes and readiness for live fire exercises.