



## MENTORING AS A SIGNIFICANT TOOL IN EDUCATION AT A CZECH UNIVERSITY

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***Abstract:** The paper deals with the author's experience in mentoring usage at the Faculty of Military Technology (FMT), University of Defence (UoD) in Brno, the Czech Republic. Firstly, the content of the term mentoring is described. Secondly, the following questions were addressed: why mentoring was used at the FMT UoD, what effects this tool has brought and what can be expected in the future.*

**Keywords:** mentoring, education, mathematics, university.

### INTRODUCTION

Some university study fields, especially technically focused ones, have not enough students. The typical basics of these study fields are mathematics, physics and IT. Moreover, some of their students require a higher attention due to their insufficient knowledge and competencies from secondary schools. On the other hand, graduates of these study fields are strongly required by the contemporary society. The most critical period seems to be the first semester of their study at the university. There is a necessity to find a suitable help for everyone who needs it.

The next text deals with the author's experience in mentoring usage at the Faculty of Military Technology, University of Defence in Brno, the Czech Republic. Among other local initiatives from faculty authorities, mentoring seems to be the most successful tool which enables to overcome study problems of faculty new students.

## **1. POWER OF MENTORING**

### **1.1 Mentoring Concept**

Serving as a mentor brings many challenges and rewards (Reh 2019). The mentor is responsible for providing support to, and feedback on, the person in his or her charge. Mentoring is the process of sharing your knowledge and experience (whatishumanresource.com website on HMR for students, 2019). The collection of mentoring definitions can be found (Gibbons 2017). It can be used in work and academic life. Mentoring is often used in corporate practise (EDOST, s.r.o., 2012). There are also mentoring programs at universities where students receive support for academic work, the right career choice, or starting their own business (Herinková, 2019). Some projects that have benefited students and parents from different cultural or disadvantaged backgrounds and projects that support their development needs are described in (SchoolEducationGateway, 2017).

The term mentoring can be defined as a long-term professional relationship (partnership) focused on supporting the growth and development of the mentee. The mentor (senior or more experienced person) is a guide who gives his/her experience and knowledge in a specific topic or field of knowledge. Transferring of knowledge, suitable approaches and competency is realized in a natural environment, e.g. at school, at workplace. The result is that the mentee can find a proper point of view and a solution of a problem.

The mentor should have main responsibilities as follows:

- assist the mentee in developing talents;
- allow the mentee to grow and become more independent;
- maintain dialogue and discussion, objectivity and balance;
- prepare the content and participate in regular meetings with the mentee;
- accustom the mentee with the values, culture, policies and systems of the organization;
- share information with the mentee about continuing professional development and opportunities;
- provide feedback to mentee and emotional support as needed.

### **1.2 Mentoring in the Faculty of the University Environment**

Mentoring at the Faculty of the University can be described as a mentoring which has its own specifics. It can be beneficial in three main aims:

- 1) senior academic as a mentor and junior academic as a mentee;
- 2) academic as a mentor and student as a mentee;

- 3) student of higher year of study as a mentor and student of lower year of study as a mentee.

A help given in the form of mentoring for the junior academics can be realized in two main aims. A senior academic can be the mentor in the field of teaching and/or a research work and publishing. Close co-operation between older and younger academics can significantly support growth of faculty departments.

Part of the new students can have adaptation and/or study problems due to the different focus of prior learning and knowledge gained. The faculty can offer various forms of tutoring focused on key subjects but a suitable solution can be mentoring or combination of tutoring and mentoring.

Selection of academics who could be good mentors should be realized very carefully. It should be solved with regards to not only a professional focus which is required. The key role is also played by own interest of a concrete teacher to work as a mentor. The whole process of mentoring should be set up and co-ordinated from the faculty level.

The highest needs for mentors can be expected at the faculties with a higher number of students from different culture environments. Especially these students could find mentoring as a significant source of their study success.

### **1.3 Contemporary ICT Tools and e-Learning for Mentoring**

Modern ICT tools and e-Learning play an important role in contemporary education including mentoring. Mentoring should be fully opened to the possible using of modern ICT tools and e-Learning. It is the important mentor's responsibility to select those items of modern technology which can bring the best effects for his/her mentees. On the other hand, each mentor should be familiar with modern ICT tools and appropriate selection and/or recommendations should be done after discussion with his/her mentees.

Similar conditions are valid for the using of e-Learning. Mentors should keep in mind all the scope of various e-Learning courses which are available. The selection and/or recommendation the most suitable ones should be done due to his/her knowledge of personal characteristics and needs of his/her mentees.

The mentor's work should be aimed at the predefined goals of mentoring. Modern ICT tools and e-Learning courses can make the mentoring easier but sometimes more complicated. Personal characteristics and current knowledge and competences of the mentor and his/her mentees are the basis for the mentor's decisions.

What ICT tools and e-Learning courses can be best solution for one group (mentor and a few mentees) is not possible to apply to another group (mentor and a few mentees). Information exchange and discussion the topic of selection of suitable ICT tools and e-Learning courses are irreplaceable.

The faculty should support its mentors in various ways. Firstly, it should enable mentors to request courses which could serve their development and improving of their work with mentees. Secondly, it should regularly organize meetings of faculty mentors with the aim of information exchange and their work assessment. It is not probable that mentors should create new e-Learning courses but they should be informed what they can use and what are the current opinions in the community.

## **2. MENTORING AT THE FACULTY OF MILITARY TECHNOLOGY OF THE UNIVERSITY OF DEFENCE IN BRNO**

### **2.1 The Way to Mentoring and Setting It Up**

The modern military is strongly based on technical devices and appropriately educated people. The Faculty of Military Technology (FMT) is the only technically focused military faculty in the Czech Republic and faculty graduates are in great demand of the Ministry of Defence (MoD) and the Czech Armed Forces (CAF). In the last years the FMT places increased emphasis on continuous five-year study.

New students of the FMT have often study problems in mathematics. In order to radically reduce the number of students who are leaving the faculty during the study, the FMT has been practising mentoring since winter semester of the academic year 2018-2019.

The rules have been set for winter semester as follows:

- 1) Each department of the FMT provided a few mentors. The main focus of their work was the secondary school mathematics. All the FMT mentors were coordinated by a selected mathematician from the Department of Mathematics and Physics. Recommended topics and examples were given to mentors as a support for their work.
- 2) Each mentor provided service for approximately 3 students. The main task was counselling on overcoming gaps in secondary school mathematics according to the specific needs of students assigned.
- 3) The mentor worked with the assigned students regularly at the scheduled time, 2 hours per week.
- 4) The expected progress of all students (mentees) was tested by the Department of Mathematics and Physics and the data were sent to mentors.

The rules for the summer semester have been modified as follows:

- 1) Mentoring was extended to secondary school Physics. The mentees whose results of exams in winter semester were better than 2.5, could co-operate with their mentor on the voluntary level. These students could only give information about their study to mentor monthly.

- 2) Mentees whose results of exams in winter semester were not better than 2.5, co-operated with his/her mentor regularly at the scheduled time, 2 hours per week.

## 2.2 Results Achieved in the First Year of Mentoring Using

To monitor the influence of mentoring at the FMT UoD in Brno, the author used a research sample comprising 80 military students studying in their first year of study at the FMT UoD. The dataset includes data gained from the following sources:

- 1) Learning Potential Test (LPT) as a part of the entrance examination of the new students of the FMT UoD;
- 2) results of two progress tests in Mathematics during the winter semester (September – December 2018), realized by Department of Mathematics and Physics, the FMT UoD;
- 3) questionnaire survey on respondents' gender, their previous studies, IT skills and work experience during the first lecture of the subject Information Technology (October 2018), realized by the author of the article;
- 4) the results of Mathematics subject exam and other subject exams and credits which were mandatory in the first semester, available at the information system of the UoD.

The LPT consists of mathematical, logical and spatial imagination tasks. Although the LPT is not focused only on Mathematics, previous study proved that LPT can bring significant information about students' current knowledge and skills in Mathematics. Pearson correlation coefficient demonstrated moderate correlation between the LPT and current knowledge and skills in Mathematics (Hrubý, Staňková, 2019).

The key criterion for the FMT UoD has been fully met. The number of unsuccessful students whose study at the FMT UoD have been stopped in winter semester of the academic year 2018-2019, has been surprisingly very low. The first analysis showed that thanks to the mentoring the number of unsuccessful military students dropped by 75 percent during the first semester.

On the other hand, the author thinks that the mathematics competency needs its own time for being definitely improved. The human brain requires a specific right time and a specific time interval for an adaptation on proper style of mathematical thinking process. Success in winter semester must be confirmed in summer semester of the academic year 2018-2019.

It should be taken into account that academics involved in mentoring did not worked with the same intensity and interest. On the other hand, the most

of students highly appreciated the help which was given to them thanks to the mentoring organizers and mentors.

### **2.3 Possible Future Development of Mentoring at the FMT**

The future development of mentoring at the FMT UoD in Brno could comprise a suitable ICT support for the both mentors and mentees (students). In the frame of the ICT support can be expected:

- 1) special web pages which could serve as a quick primary information source for mentors and students;
- 2) clear and simple enough system of motivation for mentors and mentees (students) which is electronically published, permanently available and regularly assessed.

It is a necessity to collect data connected to mentoring, analyse them, interpret achieved results and discuss them inside the FMT community. It requires close cooperation of persons in three levels: main organizers (faculty level), mentors – academics (department level), mentees (students of the FMT UoD).

The next aim can be an attempt to transfer the mentors' duties from the academic staff to the best students of the FMT UoD who are in higher year of study. Comparing the work results of academic staff and students in the role of mentor could bring interesting results.

With regards to the necessity to fulfil the planned requirements of applications of new students, the FMT UoD could extend the specific form of mentoring to the secondary schools which could be potential source of the FMT UoD new students.

## **CONCLUSION**

Mentoring can make an important contribution to personal and social growth and to the development of students as well as teachers. The author is convinced that the first year of mentoring has brought the significant positive effects at the FMT UoD in Brno.

Firstly, the new students have received a significant help for the overcoming a secondary school mathematics gap in the right time, that is, in the first semester of their military university study. Secondly, the students could not only improve their mathematics competency but also meet their future lecturers from the various Departments of the FMT UoD in Brno and to discuss mathematics from their practical point of view. Thirdly, students' in time co-operation with academic staff of the Departments of Specialization can accelerate their professional growth and to support their future research work.

The first year of mentoring at the FMT UoD seems to be the most effective measures which significantly reduced the number of failed students.

The contemporary measures should be carefully improved in order to maximize the efficiency of the energy and time involved. Especially e-Learning is a promising technology in the intended direction.

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