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Науч. рук.: Кобзева Н.А., к-т пед. н., доц.

А.К. Теркина, А.И. Наурусов
Национальный исследовательский
Томский политехнический университет

Ways to Develop Specialists in Engineering Activities: Professional Development and Retraining

This article discusses ways to develop an engineer in the form of professional development and retraining courses. The relevance of this topic is due to the lack of students' and professionals' awareness of the importance of further engineering education, the lack of interest in getting additional paid education, and the bad quality of additional education in Russia.

Keywords: additional education; retraining; employment; development; training; future.

There is an APEC (Asia-Pacific Economic Cooperation) system consisting of criteria by which a person is recognized as an engineer:

- 1) higher technical education in engineering
- 2) independent activity in the form of writing articles and publications
- 3) work experience in the field
- 4) professional development courses.

The last point is directly related to the topic under consideration and speaks about the importance of qualification upgrading courses in the work of an engineer [6, p. 33].

Completing a professional development course is a quick process, at the end of which, according to the results of the commission exams, the student receives a diploma, a grade and the knowledge for further work.

It will be beneficial for the companies to choose employees who have not only completed an internship under the university program, but also have further knowledge in the field of activity where they are to work. For this purpose,

there are courses to improve the qualifications and retraining of specialists, which can be taken not only after receiving a complete higher education, in the form of diplomas of bachelor's, master's and postgraduate studies, but also during basic training, which reduces the student's time and gives him the opportunity to sign a contract with the enterprise, not having yet a complete higher education.

This is how you can ensure yourself a professional activity on the industrial practices, because such practice will not only be a mandatory form of attendance because of the university program, but also the opportunity to work in the role of a qualified specialist and receive payment for their activities. This will increase your chances of getting a job, improve your English, of course, by means of CDIO standards [1] and increase your communication connections. Professional development programs can be offered by a university, a specialized training center, or by the enterprise itself. These programs are also possible with the conclusion of a contract between the university and the company directly. In the case of such training, the student can expect, based on the terms of the contract, the possibility of further employment, targeted training, internships in other countries, scholarships and other privileges [3, p. 113].

If we consider enterprise training – this type of advanced training is losing its popularity every day, because it is more profitable for an enterprise to accept employees with existing experience in the field rather than training them from scratch. Moreover, companies do not invest enough money to train the specialists they hire and count on university training. However, this does not cancel the fact of the benefit of further training at the company [5, p. 4].

The main problem with the lack of additional education of the topic of professional development courses in higher education institutions is the lack of motivation for teachers to explain the topic due to the low salary of the professor, because for teachers it is only an additional workload. Therefore, the organization by the university of refresher courses or complete retraining is possible only by young and social teachers who are interested in it and are able to take additional work [4, p. 43].

Moreover, if we consider the development of the engineer-teacher, it is worth considering all the importance and further impact on teaching for students and other specialists. If the educator does not have a certain professional knowledge, is not familiar with the latest discoveries in his field – it will affect the development of other engineers, which will negatively affect the field of work of these specialists and can lead to major troubles in the work at the enterprise. Therefore, an educator should not only be a professional worker, but also a social public figure, who can properly present the material to future specialists.

At the moment, with the development of digital technology, continuing education takes place, for the most part, in a distant format. This method has both pluses and minuses. Among the pluses is the ability of the teacher to prepare for the lesson independently and for a longer period of time. The possibility of simultaneous clarification of the actual material and presenting it to students. Moreover, this form of education allows students to flexibly form their schedule of classes and reduces costs, which is convenient for learning.

However, as the term of the full-time format decreases, the attention of students decreases, which does not allow them to assimilate the topic completely and it remains for independent learning, because in lectures students are passive participants, not involved in the process [11, p. 3]. The lecture format lacks contact with the teacher, the opportunity for discussion, lively discussion, and, most importantly, practice. For engineering activities, it is important to be able to apply one's knowledge in practice. For this purpose, simulators and models of installations are used, the work on which is carried out by means of projecting the situation. Certainly, this method is worse than personal presence at the enterprise and operating the equipment, but it has its advantages: the possibility to assemble the equipment independently without the danger of equipment breakage, the possibility to make mistakes and the ability to repeat the operation until the full understanding [7, p. 2; 8, p. 3].

Virtual training is also presented in the form of modules, which offers a more accurate assimilation of information, understanding of the actions taking place due to the possibility of repeating the material at any time and independent learning, as an opportunity to understand yourself.

It is also important to consider the problems of the courses: inaccuracy of the delivered information due to unorganized or uninformed teachers; mismatch of the knowledge criteria of the educational program and the host company – customer dissatisfaction [10, p. 9].

When you choose professional development courses, it is important to pay attention to the people who conduct the courses and how they are conducted. Thus, it is important to use new methods in training, such as brainstorming – this procedure consists in discussing the topic and finding solutions to problems by providing a large number of ideas by different participants in the conversation. The synectic method, which consists in finding ideas by comparing them with existing ideas, is also gaining momentum. It is also important to note the consideration of absolutely opposite points of view, it helps a person to properly justify the proposed solutions, to argue their position and find several ways to solve the problem. The presented methods are called game methods, because they include discussions and direct discussion of current topics, finding solutions and comparison with possible situations from life. Such

learning methods help develop professional skills and teach you to think logically in stressful situations [2, p. 3; 9, p. 3].

In addition to advanced training, there are also full retraining courses. A professional retraining program includes a full re-training – getting new knowledge without experience in the topic in question. A qualification that is not related to basic education and allows you to complement your existing skills for further and fuller development [12, p. 47].

Thus, most often retraining is associated with obtaining a diploma of technical translator. An important part of training is the connection with foreign languages, as it allows not only to develop a person in the future independently, studying foreign articles, but also increases communication - partnership cooperation. Communication with foreign figures is associated with understanding the topic, the language and the ability to express themselves correctly and competently in their own language. Thus, an engineer should develop not only in his/her field, understand the main problems in his/her activity, but also be a linguistically educated person, be able to express his/her thoughts correctly, engage in project activities and come into contact with foreign figures [5, p. 14].

Thus, an engineer's profession is all about constant development in his own and neighboring fields [1]. Professional development and retraining courses will help a specialist learn new aspects of activity, increase the existing grade and increase the chances of promotion. Good communication, knowledge of one's job, accuracy, logic and literacy will allow a person to establish partnerships, which will lead to the growth of the campaign and the development of the country's economy.

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Scientific advisor: Aksenova N.V., PhD in Literature, associate professor.