

В целом видно, что студенты положительно оценивают наличие дисциплины «Творческий проект» в учебном плане и дают высокую оценку качеству ее проведения.

Вывод: Кто такой инженер? И что такое творчество? Инженер от лат. «ingenium» означает способность, изобретательность. Инженер имеет дело с разработкой и внедрением инноваций и для этого ему необходим творческий как подход как основа будущей деятельности. Творчество – создание чего-то нового, которое непременно разрешает определенную проблему. Отсюда видно, что эти два понятия тесно связаны. Поэтому авторы считают, что дисциплина «Творческий проект» положительно влияет на процесс обучения студентов младших курсов и дает возможность получения глубоких практических знаний технических основ будущей профессии.

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THE THEORY OF MULTIPLE SIMULTANEOUS DISCOVERIES

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Since the beginning of time, people have been making different discoveries and inventions. They make great discoveries, which are based not only on the experience of previous generations, but on experiments and scientific analysis. However, what is the nature of discoveries? Theories of invention has been an ongoing discussion for more than a century. Nowadays this problem is still actual. Different scientists support the various probable reasons of discoveries occurrence. The four main theories are the traditional genius theory: the classical sociological theory of cultural maturation and multiple discoveries, the theory of attribution and the theory of

chance and serendipity [2]. At this paper a theory of multiple independent inventions are going to be covered.

Throughout history, major scientific breakthroughs and notable inventions have occurred simultaneously and independently among different thinkers and inventors, who, more often than not, had no direct contact with each other. The phenomenon is known as "multiple discovery." This theory was documented in 1922 by sociologists William Ogburn and Dorothy Thomas. They presented a list of 148 examples and asked why a multiple discovery is so frequent in science. They emphasized two essential factors, as the cultural preparation and the development of scientific technique and instrumentation [2].

The most famous and interesting examples will be presented in this paper. Newton and Leibniz independently invented calculus; Alexander Graham Bell and Elisha Gray both filed a patent for the telephone on the same day — within three hours of each other; sunspots were simultaneously discovered by four scientists living in four different countries and at least 23 other people who built a prototype of light bulbs before Edison.[1] The invention of decimal fractions is credited to Rudolph, Stevinus and Biurgi. The molecular theory is due to Avagadro in 1811 and to Ampere in 1814. Oxygen was discovered by Scheele and by Priestley in 1774. Both Cros and du Hauron invented color photography in 1869. The thermometer was invented at least by six different persons and nine scientists were sure that each of them is the inventor of the telescope [4].

Several individuals in England and in America invented simultaneously typewriting machines [4].

The invention of the steam engine was only possible because of the work and scientific inquiry, which was made by people during the previous decades. By the beginning of the 18th century the nature of the vacuum and the method of obtaining it were researched. Steam boilers capable of sustaining any desired pressure had been made. After this, Savery and then Newcomen built early versions of the steam engine before James Watt improved the engine by adding a separate condenser, and became known as the inventor of the steam engine [1].

Simultaneity of inventions results from broad access to a shared base of knowledge about the world, and so has gone with the acceleration of technological progress. In addition, an access to the base of human knowledge grows the same, as does the number of possible inventors and the probability of simultaneous invention. Inventions rarely occur in isolation. They build closely on what came before. Moreover, multiple scientists at about the same time quite often make inventions [3].

To sum up, all these facts prove that inventions are inevitable. Even if a particular inventor had never been born, there is a great chance that someone else would still have created the invention. The fact that certain ideas or inventions occur at the same time to different people proved that they seem to have been destined to come about precisely when they did because of cultural factors [5].

Speaking for myself, I absolutely support this theory and believe that inventions are the necessary results of a social process and independent simultaneous discoveries are unavoidable.

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ПРИМЕНЕНИЕ КЕЙС-МЕТОДА ДЛЯ ОБУЧЕНИЯ БУДУЩИХ ЭНЕРГЕТИКОВ

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Несмотря на то, что ВУЗы России каждый год выпускают тысячи молодых специалистов с высшим техническим образованием, в нашей стране имеется дефицит высококвалифицированных инженерных кадров. Проблема характерна не только для России, педагоги