INTERNATIONAL CONFERENCE ON
ANALYSIS OF MATHEMATICS AND EXACT SCIENCES

WARSAW

INTERNATIONAL CONFERENCE ON ANALYSIS OF MATHEMATICS AND EXACT SCIENCES
Volume 01, Issue 03, 2024 (5-MARCH)

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Predicting Birth Weight Using Artificial Neural Network

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Abstract: In this research, an Artificial Neural Network (ANN) model was developed and tested to predict Birth Weight. A number of factors were identified that may affect birth weight. Factors such as smoke, race, age, weight (lbs) at last menstrual period, hypertension, uterine irritability, number of physician visits in 1st trimester, among others, as input variables for the ANN model. A model based on multi-layer concept topology was developed and trained using the data from some birth cases in hospitals.

The evaluation of testing the dataset shows that the ANN model is capable of correctly predicting the birth weight with 100% accuracy.

Keywords: Artificial Neural Networks, Birth Weight, ANN, Predictive Model.

1. INTRODUCTION

The main objective of a birth weight prediction system is to identify and the weight of the baby, Do you a normal weight or a low weight, and baby's low weight affects her life, such as injury squint.

This study seeks to explore the possibility of using the artificial neural network model to predict the birth weight, at the lowest possible time and high accuracy in the results.

Of course one would expect the birth weight to be associated with several influential factors as mentioned earlier. On the other hand it is clear that it will be very difficult to find a mathematical model that may be an appropriate model for this relationship between performance/factors. However, one realistic method of the weight prediction may be to study data on the background of the some factors.

The practical approach to this type of problem is to apply a regression analysis in which data is better integrated into some functions. The result is an equation in which both input x_j is multiplied by w_j; the sum of all these products is constant,, and then an output of $y = \Sigma w_j x_j +$, is given, where $j = 0.n$.

The problem here is that it is difficult to choose a suitable function to capture all data collection as well as automatically adjust the output in the case of

more information, because prediction is controlled by a number of factors, and this control will not be any clear and known regression model.

The artificial neural network, which simulates the human brain in solving a problem, is a more common approach that can address this type of problem. Thus, attempting to develop an adaptive system such as artificial neural network to predict the temperature based on the results of these factors [1].

1.1 The objectives of this study are:

To identify some appropriate factors that affect the low birth weight.

To convert these factors into appropriate models for adaptive system coding.

Designing an artificial neural network that can be used to predict weight based on some predefined data.

2. THE ARTIFICIAL NEURAL NETWORKS

An Artificial Neural Network (ANN) is an application of Artificial Intelligence [4-58]. ANN is an arithmetical model that is motivated by the organization and/or functional feature of biological neural networks. A neural network contains an interrelated set of artificial neurons, and it processes information using a connectionist form to computation. As a general rule an ANN is an adaptive system that adjusts its structure based on external or internal information that runs through the network during the learning process. Recent neural networks are non-linear numerical data modeling tools. They are usually used to model intricate relationships among inputs and outputs or to uncover patterns in data. ANN has been applied in numerous applications with considerable attainment [4-5]. For example, ANN has been effectively applied in the area of prediction, handwritten character recognition, evaluating prices of lodging [6-7].

Neurons are often grouped into layers. Layers are groups of neurons that perform similar functions. There are three types of layers. The input layer is the layer of neurons that receive input from the user program. The layer of neurons that send data to the user program is the output layer. Between the input layer and output layer are hidden layers. Hidden layer neurons are only connected only to other neurons and never directly interact with the user program. The input and output layers are not just there as interface points. Every neuron in a neural network has the opportunity to affect processing. Processing can occur at any layer in the neural network. Not every neural network has this many layers. The hidden layer is optional. The input and

output layers are required, but it is possible to have on layer act as both an input and output layer [7].

ANN learning can be either supervised or unsupervised. Supervised training is accomplished by giving the neural network a set of sample data along with the anticipated outputs from each of these samples. Supervised training is the most common form of neural network training. As supervised training proceeds the neural network is taken through several iterations, or epochs, until the actual output of the neural network matches the anticipated output, with a reasonably small error. Each epoch is one pass through the training samples. Unsupervised training is similar to supervised training except that no anticipated outputs are provided. Unsupervised training usually occurs when the neural network is to classify the inputs into several groups. The training progresses through many epochs, just as in supervised training. As training progresses the classification groups are "discovered" by the neural network [6].

Training is the process by which these connection weights are assigned. Most training algorithms begin by assigning random numbers to the weight matrix. Then the validity of the neural network is examined. Next the weights are adjusted based on how valid the neural network performed. This process is repeated until the validation error is within an acceptable limit [5].

Validation of the system is done once a neural network has been trained and it must be evaluated to see if it is ready for actual use. This final step is important so that it can be determined if additional training is required. To correctly validate a neural network validation data must be set aside

that is completely separate from the training data [7].

About 60% of the total sample data was used for network training in this paper. About 30% of the total sample data served as test and the remaining 10% used for validation of the system.

3. METHODOLOGY

By looking deeply through literature and soliciting the experience of human experts on birth children, a number of factors have been identified that have an impact on the low birth weight. These factors were carefully studied

and synchronized in an appropriate number to encode the computer in the ANN environment. These factors were classified as input variables. Configurations variables reflect some possible levels of know birth weight by values and factors.

4 The Back-propagation Training Algorithm

o Initialize each wi to some small random value

o Until the termination condition is met, Do

o For each training example $<(x_1,…x_n),t>$ Do

o Input the instance $(x_1,…,x_n)$ to the network and compute the network outputs ok

o For each output unit k: $\delta_k=o_k(1-o_k)(t_k-o_k)$

o For each hidden unit h: $\delta_h=o_h(1-o_h) \Sigma_k w_{h,k} \delta_k$

o For each network weight wj Do $w_{i,j}=w_{i,j}+\Delta w_{i,j}$, where $\Delta w_{i,j}= \eta \delta_j x_{i,j}$ and η is the learning rate.

4. EVALUATION OF THE NEURAL NETWORK

As mentioned previously, the purpose of this experiment was to predict the weight newborn child. Where we used data, which provides the possibility to implement and test the neural network and its learning algorithm. Our neural network is a sensor expression designed to detect the presence of one of two sets of materials. Alternatively, human reading maybe wrong.

After training and validation, the network was tested using the test data set and the following results were obtained. This involves inputting variable input data into the grid without output variable results. The output from the grid is then compared with the actual variable data.

The neural network was able to accurately forecast 100% of the excellent data (representing 8 inputs and based on the inputs.) We have two outputs represented in values and each value is as follows: (0)100% , (1) 100%.

5. CONCLUSION

The artificial neural network model was presented to predict the weight of the newborn baby based on specific inputs.

The model was tested and the total score was 100%. Thus, the potential of the artificial neural network to predict the weight of the newborn baby was reviewed.

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EXAMINATION OF THE WASTE RESULTING FROM SEED COTTON CLEANING

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Annotation. The article presents a dynamic model that explains how impurities pass through cotton's bulk and attach themselves to it elastically. Patterns in the movement of the particles inside and on the surface of the cotton mass because of the forces acting on them have been detected based on the cleaning drum's parameters. The forces exerted on the particle can be expressed by the cleaning drum's radius and angular velocity.

Keywords: friction force, screen bars, angular velocity, fibers, and spiky cylinder.

Known designs of cleaners are based on shock-shaking action on fibrous material [1]. Even though the improvement of purifier designs is an ever-increasing trend, the industry's demand for highly efficient purifiers is not decreasing. It should also be noted that with the improvement of purifier designs, their main working elements remain the same. This, in our opinion, is a consequence of the fact that the essence of the process of cleaning fibrous material from impurities is not sufficiently disclosed; the existing dynamic and mathematical models do not fully correspond to the real cleaning situation. Therefore, any progressive attempts to describe the purification process using the latest scientific advances should be welcomed.

Linear [2], and nonlinear [3] dynamic models of the process of cleaning fibrous material are known. Models have also been developed aimed at separating impurities from the surface of a layer of fibrous material [4], separating debris from fibrous material when layers are shifted [5], and separating debris during their interaction with the working parts of the baking powder [6]. There are also attempts to describe the process with empirical formulas based on experimental material [7]. Even though the models sufficiently solve the problems assigned to them, due to the assumptions made in the development or analysis of the models, some questions were not answered, which led to the development of a dynamic model that takes into

account the masses of the speck associated with the fibrous material by an elastic band, the force of dry friction interacting with the surface of the material.

Let the fibrous mass contain a speck of mass m_c, which is connected to it by an elastic element and the force of dry friction. Depending on its location in the fibrous mass, we divide the mote into two types. The first type of specks is located on the surface of the scrap and in contact with the mesh surface. Such specks have an angular velocity equal to the speed of the peg, and in addition, under the influence of centrifugal force, they predominantly move through the mesh hole in the radial direction from the center. We denote the distance from the center to the speck by $r(t)$. We assume that the speck is connected to the fibrous mass through an elastic element with variable stiffness and write the equation of motion of the speck

$$m_c \ddot{r} = m_c g \sin(\alpha + \omega t) + m_c \dot{r}^2 / R - k_c (r - R) \,(1)$$

where k is the stiffness coefficient of the mote-fiber bundle and depends on the movement $r - R$, i.e. $k_c = k_c(r - R)$, where the function $k_c(z)$ is determined experimentally and has a monotonically decreasing character, and after the separation of the speck from the fibrous mass it becomes zero, i.e. should be taken $k_c(z) = 0$ at $z > z_0$. In particular, this function can be chosen as piecewise constant $k = k_0$ for $z < z_0$ and $k = 0$ for $z > z_0$ or piecewise linear $k_c = k_1(z_0 - z)$ for $z \le z_0$ and $k = 0$ for $z \ge z_0$.

The displacement $r(t)$ satisfies the following initial conditions

$$r = R, \; \dot{r} = R\omega_\delta^2 \text{ at } t = 0$$

In this case, the time for $t = t_k$ a speck to leave the mesh surface is determined from equations:

$$k[r(t_k) - R] = 0$$

If $t_0 \le t_k$ then the speck manages to leave the surface of the mesh during the contact of the scrap with the surface of the mesh, $t_0 > t_k$ then the speck after the interaction of the scrap with the mesh surface does not leave the scrap and continues to move with it. The results of integration of equation (1) are presented in (Fig. 1)

The second type includes specks that are found in the fibrous mass at a distance r_1 from the center of the drum, and $r_1 < R$.

In this case, these types of specks move for some time in the area inside the fibrous mass, and the movement of the specks relative to the shred is predominantly in the radial direction.   To compile the equation of motion of a mote, we assume that the mote is acted upon by the force of connection between the mote and the fibers, as well as the frictional force on the surface of their contact as a result of the movement of the mote relative to the fibrous mass. We assume that the friction force is directed tangentially to the trajectory of the mote, and the mote makes an angular movement together with the piece of fibrous mass.

We set the origin of the coordinate in the center of the drum and determine the position of the speck by coordinates (x, y) in the plane $x0y$.

$$x = r(t)\sin\theta, \ y = r(t)\cos\theta \ (2)$$

Let's create equations for the kinetic energy of a speck

$$T = \frac{m_c}{2}(\dot{x}^2 + \dot{y}^2) = \frac{m_c}{2}(\dot{r}^2 + r^2\dot{\theta}^2) \ (3)$$

The following forces act on the mote with projections along the axes $0x$ and $0y$

1. Gravity of a speck

$$X_1 = 0, \ Y_1 = -m_c g \ (4)$$

2. The strength of the binding of the mote to the fibers, depending on the distance $r - R$

$$X_2 = -k_c(r - R)(r - R)\sin\theta, \ Y_2 = -k_c(r - R)(r - R)\cos\theta \ 5)$$

3. Dry friction force on the contact surface of the speck with the fibrous mass

$$X_3 = -mgf \frac{\dot{x}}{\sqrt{\dot{r}^2 + r^2\dot{\theta}^2}} \, , \; Y_3 = -mgf \frac{\dot{y}}{\sqrt{\dot{r}^2 + r^2\dot{\theta}^2}} \; (6)$$

We accept the coordinate r as a generalized one and find the generalized force

$$Q_r = (X_1 + X_2 + X_3)\frac{\partial x}{\partial r} + (Y_1 + Y_2 + Y_3)\frac{\partial y}{\partial r}$$

Using expressions (3.12.4) - (3.12.6), we obtain

$$Q_r = -k_c(r-R)(r-R) - \frac{mgf\dot{r}}{\sqrt{\dot{r}^2 + r^2\dot{\theta}^2}} - mg\cos\theta \; (7)$$

Let us now compose the Lagrange equation of the second kind

$$\frac{d}{dt}\left(\frac{\partial T}{\partial \dot{r}}\right) - \frac{\partial T}{\partial r} = Q_r$$

Putting expressions for kinetic energy (3) and generalized force (7), we compose an equation to determine the variable r

$$m_c\ddot{r} = m_c\dot{\theta}^2 r^2 - k_c(r-R)(r-R) - \frac{m_c gf\dot{r}}{\sqrt{\dot{r}^2 + r^2\dot{\theta}^2}} + m_c g\sin\theta \; (8)$$

Equation (8) for a known angular displacement of the scrap $\theta = \theta(t)$

integrates under initial conditions $r = R$, $\dot{r} = R\omega_\delta$ at $t = 0$

From the results, it is clear that this parameter plays a significant role in the process of removing the speck. At small values, the speck is quickly removed from the composition of the scrap. For example, if we assume that the separation of the speck from the scrap occurs when the stretching value is reached $\delta = 0.02$, then the weight of the speck for which the parameter ω_{**} takes values $\omega_{**} < 1000$, then they are removed from the fibrous mass. The remaining specks are where $\omega_{**} > 1000$, then the initial speed of the speck will be insufficient for them to be removed from the mass. If the drum speed is accepted, $\omega_\delta = 120 \; ce\kappa^{-1}$ then specks with the parameter $\omega_{**} = 1000$ will also be removed.

Similar mathematical models have been compiled and used in other cotton processing processes when dismantling the reel and supplying cotton for processing, ginning cotton, and during pneumatic transportation of fibrous material [8] – [18].

Conclusions. As a result of the analysis of the dynamic model of the interaction of trash impurities with the fibrous mass in the presence of an elastic connection between them, the dependence of the parameters of the movement of trash on the angular velocity and radius of the working drum of the cleaner was established, which can be used in the development of cleaners for raw cotton.

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"AVTOMOBIL TRANSPORTINING ATROF MUHITGA TA'SIRINI KAMAYTIRISH YECHIMLARINING TAHLILI"

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Anotatsiya: Sanoat va transportdan yetkazilayotgan salbiy ta'sirini mumkin qadar kamaytirish, korxona va tashkilotlarda yirik tadbirlarni amalga oshirishga erishish va natijada atmosfera havosi sifat darajasini yaxshilashga erishish. atmosfera havosiga ifloslantiruvchi moddalar chiqarilishini 10 foizga kamaytirish(bunda 7% transportdan va 3% sanoatda); transport vositalarining 80 foizini gaz yoqilg'isi va boshqa muqobil energiyasida ishlashga o'tkazishni ta'minlash.

Kalit so'zlar: Ekologik monitoring, muqobil energiya, azot oksidi, is gazi, ozon qatlami, "Evro-6", "Evro-7".

Kirish; Bugungi kunda O'zbekistonda har yetti kishiga bittadan avtomobil to'g'ri keladi. Ya'ni, O'zbekiston ko'chalarida 4 milliondan ziyod mashina harakatlanayapti. avtomobilning foydasi bilan teppa-teng ziyoni ham borligidan ko'z yumib bo'lmaydi. Masalan, avtomobillardan chiqadigan zararli tutun atmosfera havosiga salbiy ta'sir ko'rsatadi. Bundan tashqari, avtomobil shovqini zararli tovushdir. O'zbekistondagi yirik shaharlar aholisining 60 foizdan ortig'i bugungi kunda xuddi shunday zararli shovqindan aziyat chekadi. Biz nafas oladigan havo - atmosferani tashkil etadigan qatlamlar har qaysisi o'zining muayyan vazifasiga ega. Masalan, ozon qatlami barcha tirik organizmlarni nurlanishdan saqlaydi. Quyosh nurlari ta'sirida kislorod, azot oksidi va boshqa gazlar ishtirokida hosil bo'lgan ozon kuchli ultrabinafsha nurlarni o'ziga yutib, tirik organizmlarni uning salbiy ta'siridan himoya qiladi.

Avtomobillardan havoga chiqariladigan is gazi ozonning yemirilishiga sabab bo'ladi. Mutaxassislarning hisob-kitobiga ko'ra, havoni ifloslantiradigan asosiy antropogen omillar ro'yxatida avtomobil transporti birinchi o'rinni egallaydi. Ya'ni umumiy zararning 40 foizi Yer yuzida harakatlanayotgan avtomobillar hissasiga to'g'ri keladi. Qolgan zararning 20 foizi energetika sanoati, 14 foizi korxona va tashkilot ishlab chiqarishi, 26 foizi qishloq xo'jaligi ishlab chiqarishi, maishiy kommunal xo'jaligi va boshqa sohalardan yetkaziladi.

Asosiy qism; Respublikamizdagi mavjud kamchiliklar ishlab chiqarilayotgan yonilg'ilarning, shuningdek avtomobillarning bugungi kun sifat darajasiga kelmasligi, avtomobil yo'llarining bugungi kun zamonaviy talablarga mos kelmasligi, yirik avtomagistrallarda avtomatik tizimlarni qo'llagan holda havo sifatini monitoring qilish yo'lga qo'yilmaganligi, toksikliligi va tutun qalinligini o'lchash asboblarining yetishmasligi kabilar e'tiborni tortadi. **Atmosfera havosiga chiqarilayotgan ifloslantiruvchi moddalar miqdori**

	JAMI	TRANSPORT	SANOAT
2018			
Respublika bo'yicha	**2449,1**	**1560,3**	**888,7**
Toshkent sh.	**269,8**	**254,1**	**15,7**
2019			
Respublika bo'yicha	**2534,6**	**1581,8**	**952,7**
Toshkent sh.	**390,5**	**316,0**	**74,5**

Organik turdagi yoqilg'ini yonish natijasida ifloslantiruvchi moddalar, shuningdek bug'li gazlar hosil bo'ladi

Asosiy ifloslantiruvchi moddalar	**CO, CH, NOx, SO2, al'degidlar, qattiq moddalar va boshqalar**
Bug'li gazlar tashlamalari	**CO_2, CH_4**

Respublikamizda ishlab chiqarilayotgan yonil-g'ilarning, shuningdek avtomobillarning bugungi kun sifat darajasiga kelmasligi. Avtomobil yo'llarining bugungi kun zamonaviy talablarga mos kelmasligi. Yirik avtomagistrallarda avtomatik tizimlarni qo'llagan holda havo sifatini monitoring qilish yo'lga

qo'yilmaganligi. Toksikliligi va tutun qalinligini o'lchash asboblarining yetishmasligi. O'rganish natijalariga ko'ra elektromobil transportini rivojlantirishdagi asosiy muammolar sifatida dunyoning sanoqli davlatlarida ishlab chiqarilishi, elektromobil tan narxining nisbatan qimmatligi, zaryadlash stansiyalarining kamligi, akkumulator batareyalarining zaryadlash vaqtining uzunligi, texnik xizmat ko'rsatish va servis xizmatlarining kamligi hisoblanadi.

Atmosfera havosini muhofaza qilish yo'nalishda olib boriladigan tadbirlar

1. Avtomobil parkini yangilanib borish

2. Ekologik darajasi "Evro-6" va "Evro-7'' bo'lgan motor yonilg'isini ishlab chiqarishishni ta'minlash

3. Shaharsozlik doirasida transport oqimi tarkibini, harakat tezligini rejimini optimallashtirish, yo'llarda avtomobil harakatani boshqarish tizimini rivojlantirish

4. Bosqichma-bosqich transportda muqobil energiya turlariga o'tishni ta'minlash

5. Yo'lovchi transporti harakati uchun alohida chiziqlar tashkil etish, avtotransportda davlat ekologik nazoratini profilaktika ishlarini yo'lga qo'yish bilan amalga oshirish.

Xulosa; Biz mukammal hayot tarzini qurar ekanmiz, oldimizdagi ulkan to'siqlar hamda muammolarni hal qilishimiz kerak. Zero, bizni ehtiyojlarimiz miqdori kelgusi avlod iste'moliga zarar yetkazmasin. Qachonki, tabiatni asrab avaylashni asosiy maqsad qilamiz, shundagina har birimiz o'zimiz istagan ekologik xavfsiz atrof-muhitda yashay olamiz. Shunday ekan, biz foydalanayotgan transport vositalari tashqi muhitga ta'sir qilishini oldini olish, zararsizlantirish va inson salomatligini muhofaza qilish kabi chora tadbirlarni ishlab chiqish lozim.

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O'ZBEKISTONDA YOSHLARNI "IT" SOHASIGA O'RGATISHDAGI MUAMMOLAR VA USHBU MUAMMOLARNING HAL QILISH YO'LLARI

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Annotatsiya. Bu maqolada O'zbekistonda yoshlarni IT sohasiga o'rgatishdagi muammolarni va ushbu muammolarni hal qilish yo'llarini muhokama qiladi. Maqolada, IT sohasining ahamiyati, O'zbekistonda yoshlar uchun uning ahamiyati, shu sohadagi ta'lim bilan bog'liq muammolar va ushbu muammolarni hal qilish yo'llari ta'kidlanadi. Bu muammolarni hal qilishning ahamiyatini va O'zbekistonning IT sohasida global bozorda raqobatbardosh bo'lishiga yordam berishi takidlangan.

Kalit so'zlar: Axborot Texnologiyalari (IT), yoshlar, ta'lim, muammolar, hal qilish yo'llari, resurslar va infrastruktura, sifatli dasturlar va darsliklar, malakali o'qituvchilar, qiziqish va motivatsiya, global bozor, raqobatbardoshlik, kasbiy imkoniyatlar.

Axborot texnologiyalar (IT) sohasi bugungi kunda dunyo bo'ylab har qanday sohada ishlaydigan tashkilotlar uchun muhim ahamiyatga ega. "IT" sohasi ma'lumotlarni tez va samarali tarzda ishlab chiqarish, tarqatish, saqlash va ulardan foydalanishga imkon beradi. Bu biznes, ta'lim, sog'liqni saqlash, kommunikatsiya va ko'plab boshqa sohalarda samarali ishlash uchun zarur. O'zbekistondagi yoshlar uchun "IT" sohasining ahamiyati shundaki, O'zbekiston kabi rivojlanayotgan mamlakatlarda, "IT" sohasi yoshlar uchun katta imkoniyatlarni ochib beradi. "IT" sohasi yoshlarga yangi kasb-hunarlar o'rganish, o'zlarining ijodiy qobiliyatlarini namoyish etish va global bozorda raqobatbardosh bo'lish uchun zarur bo'lgan mahoratlar o'rganishga imkon beradi. Bundan tashqari, "IT" sohasi yoshlarga uzoq muddatli va barqaror ish o'rinlari yaratishda muhim ahamiyatga ega. "IT" sohasi tez o'sayotgan sohalaridan biri bo'lib, bu soha yoshlar uchun yangi ish o'rinlari yaratishda muhim ahamiyatga ega. Shuningdek, "IT" sohasi yoshlarga o'zlarining yashash joylaridan tashqarida ham ishlash imkoniyatini beradi. Bu, yoshlar uchun mustaqil va erkin ishlash imkoniyatini yaratadi, bu esa ularning shaxsiy va kasbiy rivojlanishiga yordam

beradi. Ammo, bu imkoniyatlardan to'liq foydalanish uchun, yoshlarning "IT" sohasidagi bilim va mahoratlari zarur. Bu esa O'zbekistonda "IT" ta'limini takomillashtirish va yoshlarni ushbu sohaga qiziqishni oshirish talab qiladi. Bu borada, O'zbekistonda "IT" ta'limi bilan bog'liq muammolar haqida to'liqroq ma'lumot berishim mumkin.

Yuqorida aytib o'tganimizdek, O'zbekistonda "IT" ta'limi bilan bog'liq bir qancha muammolar mavjud. Bu muammolar bir nechta jihatlardan iborat va quyidagi muammolarni ko'rib chiqamiz:

1.   **Resurslar va Infrastruktura**: IT ta'limi uchun zarur bo'lgan resurslar va infrastrukturaning yetishmasligi. Bu kompyuterlar, internet ulanishlari, dasturiy ta'minot va boshqa texnologik va hokazolar. Bu muammolar, IT ta'limini o'rganishga qiziqqan yoshlarga zarur bo'lgan resurslarga kirishni cheklashi mumkin.

2.   **Sifatli Dasturlar va Darsliklar**: IT sohasida sifatli ta'lim dasturlari va darsliklar kam bo'lishi mumkin. Bu, yangi texnologiyalar va dasturlash tillarini o'rganish uchun zarur bo'lgan eng yangi ma'lumotlardan mahrum bo'lish degani. Maktablarda va "OTM"larda "IT" ta'lim yo'nalishlarida darsliklarning eskiligi va hozirgi kunda kerak bo'ladigan yangi texnologiyalarning o'tilmasligi.

3.   **O'qituvchilar**: Maktablarda va "OTM"larda IT sohasida malakali o'qituvchilar kam bo'lishi IT sohasida ta'lim olishni istagan yoshlar uchun sifatli ta'limni ta'minlashga to'sqinlik yaratmoqda.

4.   **Qiziqish va Motivatsiya**: Yoshlar IT sohasiga qiziqishini oshirishda muammolar bor. Bu IT sohasining murakkabligi, qiyinliklari va bu sohadagi kasbiy imkoniyatlar haqida yetarlicha ma'lumotlarning bo'lmaganligi tufayli sohani o'rganishga qiziqish so'nyapti.

Bu muammolarni hal qilish uchun bir nechta yo'llar mavjud. Bu borada, mening IT ta'limini takomillashtirish va yoshlarni ushbu sohaga qiziqishni oshirish uchun takliflarim bor.

Yuqorida sanab o'tilgan bir qancha muammolarga yechim topib "IT"ni rivojlantirish uchun quyida bir qancha takliflarimni sanab o'taman.

Birinchidan: IT resurslarini va infrastrukturani takomillashtirish uchun, ta'lim muassasalari va hukumatlar birgalikda ishlash kerak. Bu, kompyuterlar, internet ulanishlari va dasturiy ta'minotni oshirishni o'z ichiga oladi. Shuningdek, texnologik vositalarni ta'minlash uchun grantlar va mablag'lar olish uchun loyihalar ishlab chiqish ham muhim.

Ikkinchidan: IT ta'limi uchun sifatli dasturlar va darsliklar ishlab chiqish uchun, ta'lim muassasalari va IT sohasidagi mutaxassislar birgalikda ishlashi kerak. Bu, yangi texnologiyalar va dasturlash tillarini o'rganish uchun zarur bo'lgan eng yangi ma'lumotlarni o'z ichiga oladi. IT sohasiga oid chet el adabiyotlarini tarjima qilib shu asosida darsliklar tayyorlash kerak bo'ladi.

Uchinchidan: IT sohasida malakali o'qituvchilar yetishtirish uchun, ta'lim muassasalari va hukumatlar birgalikda ishlash kerak. Bu, o'qituvchilar uchun takomillashtirish kurslari va seminarlarini o'tkazishni o'z ichiga oladi. IT sohasi rivojlangan davlatlarda talabalarning ta'lim olishi uchun davlat grandlarini ko'pITrish lozim. "OTM"lardagi IT yo'nalishlarida chet elda tajriba orttirib kelgan mutaxasislar dars o'tishini taminlash kerak.

To'rtinchidan: Yoshlar IT sohasiga qiziqishini oshirish uchun, ta'lim muassasalari va hukumatlar birgalikda ishlash kerak. Bu, IT sohasidagi kasbiy imkoniyatlar haqida ma'lumot berish, IT sohasidagi muvaffaqiyatli misollar va roli modelini taqdim etishni o'z ichiga oladi. Bundan tashqari xalqaro IT kompaniyalarda ishlab yuqori daromadga ega bo'layotgan O'zbekistonlik dasturchilar va yoshlar o'rtasida uchrashuvlar tashkil qilish kerak.

Bu takliflar, O'zbekistonda IT ta'limini takomillashtirish va yoshlarni ushbu sohaga qiziqishni oshirishga yordam berishi mumkin.

IT ta'limi bilan bog'liq muammolarni hal qilishning ahamiyati juda katta. Bu muammolarni hal qilish, yoshlarga IT sohasida kasbiy imkoniyatlarni ochib beradi va ularning shaxsiy va kasbiy rivojlanishiga yordam beradi. Shuningdek, bu muammolarni hal qilish, O'zbekistonning IT sohasida global bozorda raqobatbardosh bo'lishiga yordam beradi. Bundan tashqari IT sohasi tez o'sayotgan sohalaridan biri bo'lib, bu soha yoshlar uchun yangi ish o'rinlari yaratishda muhim ahamiyatga ega. IT sohasi yoshlarga o'zlarining yashash joylaridan tashqarida ham ishlash imkoniyatini beradi. Bu, yoshlar uchun mustaqil va erkin ishlash imkoniyatini yaratadi, bu esa ularning shaxsiy va kasbiy rivojlanishiga yordam beradi.

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