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前 言

遠写教程・目录

《焦点大学英语》沐浴着大学英语教学改革的春风,经过多年教学实践的洗礼正式出版了。

本书编者们具有多年的教学经验,历经十几年的课堂教学与课外考试等实践环节,把自己对外语教学的体会以教科书的形式演绎出来,使广大英语学习者能通过本套教材的学习,掌握英语基础知识和实践英语技能。本教材注重知识点的点拨及语言运用能力的实践和创新。基础知识和语言能力测试相结合是本套教材的特点。大学英语教学大纲提出的对学生各能力的要求,在本书各章节中得到了充分的体现。值得一提的是,本书除沿用以往教科书中的精华之外,在课后练习中又增加了不同形式的练习内容,且部分练习内容与学生的各种考试内容形式相似,使广大英语学习者在学习本书时对以后英语实践内容有所了解和掌握,从而提高学习成绩。因此本书不失为一套提高学习者综合能力的教材。

本套教材分为读写教程和听力教程两部分。精读分为12个单元,由 Section A、B、C 三部分组成。其中,Section A 是精学部分,课文后配有快速阅读、仔细阅读、完形填空、改错、简短回答、汉译英、作文七项练习。Section B 是泛读部分,Section C 是自学部分,可作为阅读的补充材料练习。听力分为15个单元,每单元由短对话、长对话、短文和复合式听写等练习组成,同时配有欧美经典歌曲、电影及新闻英语供广大学习者模仿,还有测试关键词供读者借鉴。录音由美籍教师 Jimmy Franklin 和 Peggy Franklin 朗读。

在这里对这两位外教对本书所做的工作致以衷心的感谢。由于时间仓促,书中难免有不足之处,敬请广大学习者及同仁批评指正。

编 者 2007年2月

读写教程・目录

Unit One Computer Crime	1
Unit Two Nicotine and Smoking	0
Unit Three Mad Cow Disease in Canada 2	20
Unit Four America's Hot School	
Supplementary Exercise One4	
Unit Five To Save Trees, Fighting One Alien Insect with Others	19
Unit Six Take Charge of Your Learning	50
Unit Seven The Museum of London	
Unit Eight Women in Education, Sports and Media Education	8
Supplementary Exercise Two	38
Unit Nine History of Olympic Games)5
Unit Ten Child Abuse	
Unit Eleven The Best Medicine	
Unit Twelve Ancient Greece and Rome	
Final Examination One 13	33
Final Examination Two 14	11

Unit One are natially no witnesses to the computer care and the difference are natially in the computer care are not of the ca

Section A Fourth, not enough people in management and law enforcement know mough as

computer Crime with a los Angeles, police departments have set up specially trained

bout computer technology to prevent the crimes. Authorities have to be familiar with the

A computer crime is generally defined as one that involves the use of computers and software for illegal purposes. This doesn't mean that all the crimes are new types of crime. On the contrary, many of these crimes, such as embezzlement of funds, the alteration of records, theft, vandalism and terrorism, can be committed without a computer. But with a computer, these offenses can be carried out more quickly and with less chance that the person responsible for the crime will be discovered.

Computer crimes are on the rise and have been for the last twelve years. Just how much these computer crimes cost the American public is in dispute, but estimates range from \$3 billion to \$5 billion annually. Even the FBI, which attempts to keep track of the growth or decline of all kinds of crimes, is unable to say precisely how large a loss is involved; however, it estimates that the average take from a company hit by computer crime is \$600,000. A number of reasons are given for the increase in computer crime: (A. more computers in use and, thus, more people who are familiar with basic computer operation; (B. more computers tied together in satellite and other data-transmission networks; and (C. the easy access of microcomputers to huge mainframe data bases.

The Criminal

Movies and newspaper stories might lead us to believe that most computer crimes are committed by teenage "hackers" -brilliant and basically good children who let their imagination and technical genius get them into trouble. But a realistic look at the crimes reveals that the offender is likely to be an employee of the firm against which the crime has been committed, i. e., an "insider".

Difficulty of Detection and Prevention

Given the kind of person who commits a computer crime and the environment in which the crime occurs, it is often difficult to detect who the criminal is. First of all, the crime may be so complex that months or years go by before anyone discovers it.

Second, once the crime has been revealed, it is not easy to find a clear trail of evidence that leads back to the guilty party. After all, looking for "weapons" or finger-

prints does not occur as it might in the investigation of more conventional crimes.

Third, there are usually no witnesses to the computer crime, even though it may be taking place in a room filled with people. Who is to say if the person at the next terminal, calmly keying in data, is doing the company's work or committing a criminal act?

Fourth, not enough people in management and law enforcement know enough about computer technology to prevent the crimes. Authorities have to be familiar with the computer's capabilities within a given situation to guard against its misuses. In some large cities, such as Los Angeles, police departments have set up specially trained computer crime units.

But even when an offender is caught, the investigators, attorneys, judges, or juries may find the alleged crime too complicated and perplexing to handle. More attorneys are specializing in computer law and studying the computer's potential for misuse.

After a computer crime has been discovered, many companies do not report it or prosecute the person responsible. A company may not announce the crime out of fear that the pubic will find out the weaknesses of its computer system and lose confidence in its organization. Banks, credit card companies, and investment firms are especially sensitive about revealing their vulnerabilities because they rely heavily on customer trust.

To avoid public attention, cautious companies will often settle cases of computer tampering out of court. And if cases do go to trial and the offenders are convicted, they may be punished only by a fine or light sentence because the judge or jury isn't fully trained to understand the nature and seriousness of the crime.

Not all companies are **timid** in **apprehending** computer criminals. For example, Connecticut General Life Insurance Company decided it had to get tough on **violators**. So when the company discovered that one of its computer technicians had embezzled \$200,000 by entering false benefit claims, it presented its findings to the state's attorney and aided in the prosecution of the technician. The technician was found guilty and sentenced to prison, not just for the computer misuse, but also for grand theft and insurance **fraud**. Connecticut General now has a policy of reporting all incidents of theft or fraud, no matter how small.

Given the kind of person who commits a conscious serious and Expressions as a serious serious

embezzlement n. using (money placed in one's care) in a wrong way to benefit oneself 侵吞; 盗用: 挪用

Difficulty of Detection and Prevention

vandalism son. so built of damage; destruction 恶意破坏; 野蛮行为 sold source buses take n. sold source amount taken or caught at a time etc. 捕获量; 收获量 sold source buses to be source to be source.

mainframe n .	large powerful computer with extensive memory 主机 would like all all all all all all all all all al
hacker n. seemd s	person who uses a computer to gain unauthorized access to computer
	3. It is implied in the Paragraph 3 that most computer co 客黑 knowton emi
genius n .	gifted talent 天才;天赋
trail n. tuquo tenings	track or scent left by a moving thing, person, etc. 痕迹; 足迹; 踪迹
witness n .	1. person giving sworn testimony 证人 young to lot a lead yilling
	2. person or thing whose existence proves something 可作证据的人或
	to the crime.
a and the difficulties in	3. testimony. evidence 证据 and tuods vinism at eyassed adl :
v.	to be a witness of sth. 见证; 目睹
	1. apparatus for the transmission of messages to and from a computer,
	communications system, etc (计算机) 终端; 终端设备
	2. terminus for trains or long - distance buses 终点站
enforcement n .	1. forcing people to obey 强迫服从 ugmoodemans thigh of semisasm
	2. making sth. effective 实施; 执行 inagmos has there was a line of the control of t
attorney n.	lawyer 律师 wilder here they place too much reliam律 navel
alleged a .	stated without being proved 陈述的;被控的
perplex v .	1. puzzle, bewilder 使迷惑; 使惊慌失措
	2. complicate or confuse (a matter) 使难办; 使复杂化
	each blank from a list of choices given in a word bank f 和 each pass
	the state of being easily wounded or harmed 脆弱性
convict v.	1. prove to be guilty 证明有罪 anibnogramos sait disa zkanid sait life
	2. declare guilty by a legal process 宣判有罪
tamper v. danses of	1. meddle with or change illicitly 干预; 篡改
	2. exert a secret influence upon 秘密参与
apprehend v .	1. seize, arrest 逮捕
s in northern Japan ap-	2. understand, perceive 理解
timid a. ad wod ban	fearful and hesitant 胆怯的,害怕的,犹豫不决的
violator n. visasvini	person who breaks an oath, treaty, law etc. 违约者; 违法者
fraud n .	1. criminal deception 欺诈; 诈骗 short a lo semulov niand grinus son
	try than in the towns. Those least at risk, says Matsuzawa, are lawyers, . (
fices are, however, as	sors and hoctors. White collar workers do Exercise of San William Bovernment of
	likely to have contracting brains as the farm worker, but driver and show one

likely to have contracting brains as the farm worker, bus driver and shop assistant are doing better.

I Fast Reading show that thinking can prevent the brain from shrinking show that thinking can prevent the brain from the brain and the brain from the brain and the brain from the brain and the brain from the brain fr

Directions: For questions 1—7, mark

Y (for yes) if the statement agrees with the information given in the passage;

N (for NO) if the statement contradicts the information given in the passage;

NG (for NOT GIVEN) if the information is not given in the passage.

For questions 8—10, complete the sentences with the information given in the passage.

- 1. The FBI knows exactly how large a loss is involved in computer crimes.
- 2. It has become easy for microcomputer owners to use huge mainframe data bases.
- 3. It is implied in the Paragraph 3 that most computer criminals are the employees of the concerned companies.
- 4. Many companies don't report computer crimes because law procedures against computer crimes usually cost a lot of money.
- 5. When computer crime takes place in a room filled with people, there are usually many witnesses to the crime.
- 6. The passage is mainly about the increase of computer crimes in America and the difficulties in combating computer crimes.
- 7. Computer crimes are on the rise because more cheap microcomputers are available.
- 8. According to the passage, computer crimes has been on the rise for the last _____ years.
- 9. Connecticut General Life Insurance Company is cited as ______ of companies that took serious measures to fight against computer crimes.
- 10. Banks, credit card companies, and investment firms are especially sensitive about revealing their vulnerabilities because they place too much reliance on ______.

II Reading Comprehension (Reading in Depth)

Directions: In this section, there is a passage with ten blanks. You are required to select one word for each blank from a list of choices given in a word bank following the passage. Read the passage through carefully before making your choices. Each choice in the bank is identified by a letter. Please fill the blanks with the corresponding letter for each item. You may not use any of the words in the bank more than once.

If you want to stay young, sit down and have a good think. This is the research finding of a team of Japanese doctors, who say that most of our brain are not getting enough ____ and as a result, we are aging unnecessarily soon.

Professor Taiju Matsuzawa wanted to find out why 2 healthy farmers in northern Japan appeared to be losing their ability to think and 3 at a relatively early age, and how the process of aging could be slowed down. With a team of colleagues at a Tokyo National University, he set about measuring brain volumes of a thousand people of different ages and varying 4.

The findings show in general terms that ___5__ of the brain begins sooner in people in the country than in the towns. Those least at risk, says Matsuzawa, are lawyers, ___6__ by university professors and doctors. White collar workers doing ___7__ work in government offices are, however, as likely to have contracting brains as the farm worker, bus driver and shop assistant are doing better.

Matsuzawa's findings show that thinking can prevent the brain from shrinking. Blood must circulate 8 in the head to supply the fresh oxygen the brain cells need. "The best way to maintain good blood 9 is through using the brain," he says, "Think hard and 10 in conversation. Don't rely on pocket calculators.

A.	circulation	D.	exercise	G.	possession	J.	otherwise	M.	(vague) T(M To)
B.	routine	E.	properly	H.	shrinking	K.	sufficient	N.	occupations
C.	presumably	F.	followed	I.	reason	L.	engage	0.	interpreted

Ⅲ Cloze

Directions: There are 20 blanks in the following passage. For each blank there are four choices marked A, B, C and D. You should choose the ONE that best fits into the passage.

Some friends visiting me from the Caribbean remarked on the tobacco I was smoking. It seemed that the same tobacco was popular in their country, but I was paying four times __1__ for it than __2_. They offered to send me some when they __3__ I was very grateful and promised to pay them for it.

A few more weeks 15 and the package finally reached me. It was covered 16 official government stamps and seals. I opened it and took out the letter. It said: "17 your tobacco. We hope 18 it. It's silly paying so much for it when we can buy it so 19 here. We'll send you 20 four packets next month."

1. A. as more	B.	less	C.	as much as	D.	Section B som	
2. A. they had done	В.	they had	C.	they had been	D.	they were	
3. A. came home	B.	came here	C.	arrived home	D.	arrived here	
4. A. told a si lamid ad	B.	saying	C.	informing and old of a	D.	asking Istravorumoo	
5. A. over as cibute edit of	B.	ents a major i ni	C.	sen to celebrity statino	D.	above tend unluque A	
6. A. contain and to moldo	B.	hold at refuoitise	C.	have people involvesvah	D.	possess bas somethus	
7. A. could and mad T.	В.	would meet how	C.	strained relationsh tsum	D.	might a stantage spain	
8. A. about "eavland" h	B.	from rigo " night	C.	peris" on the topic tota	D.	brings out one or $\operatorname{tv}\!\mathbf{lo}$	
9. A. expensive has teen	B.	excellent	C.	cheap rotarebom a as a	D.	tion. Finally, tilulwa	
10. A. Instead bevlovni	B.	Therefore	C.	Because ampling has an	D.	On the other hand	
11. A. hear and stoolled	B.	hearing	C.	being heard and almost of	D.	be heard	
12. A. know fermi novo a	B.	take ofform a	C.	il problems over sobar	D.	look at migras of your	
13. A. except for	В.	unless revo es	C.	in spite of	D.	concrete eventuodiw	
14. A. In the end	В.	At the last	C.	In end one sortota bas	D.	At last day of the	
15. A. pasted	В.	passed	C.	having passed o equito	D.	had passed	
16. A. by ad oppoid on b	В.	e Berry Sh dtiw	C.	however, may be the los	D.	over eldaton A	
17. A. This is bevieser y	B.	There is sewel	C.	Here is we to sensibus	D.	It is a nationwide test at	
18. A. you enjoying							
19. A. cheaply at an are							
20. A. other							

IV Translation
Directions: Complete the sentences by translating into English the Chinese given in brackets.
1. As the seven-day conference with tred to div 3/40 and second blanch and _0 (快要结束的时候),
benthe chairman is busy preparing his closing speech ddina end mond am antitive shariff amount
2. 1 1 10 1 20 1 20 (信不信由你), her sole purpose in saying all that is to help you
2 . They offered to send me some when they 3 I was very grateful and pro. rattem sint) nihem
3. The fence along the middle of the road is intended to protect vehicles
Some weeks later an official letter arrived in a brown envelope. It was from t.(
4. The United States of it is a small of the United States of its in the United State
5. and because (只要你不断努力), you will be able to resolve this difficult problem soon-
7 have to pay customs duty, tax and a penalty. If they did not hear 8 me, tiratal ro rade-
stroy the package. It was going to turn out to be rather 9 tobacco, if I paid everything they de-
manded. 10 , I had been looking forward to 11 from my friends, and want gnitirW2V
Directions: In this exercise, you are required to write a letter of complaint to your neighbor who lives
above your apartment in the same building and makes a lot of noise at night recently. You should write
at least 120 words following the outline given below in Chinese. Data 21 selection well A
1. 你清楚、礼貌地告诉他(她)自己的休息受到了影响。 sage I salese bus equals insurance vo

Section B arom .C

Television talk shows have become one of the most popular media genres for presenting highly controversial social issues in the United States, and around the world, the format is predictable. A popular host who has risen to celebrity status presents a major issue to the studio and television audience and then introduces people involved in the particular issue or problem at hand, e. g. marriage partners trapped in strained relationships, or unwed teenage mothers. Then the host typically brings out one or two "experts" on the topic to give their "opinions" and "analyses" of the situation. Finally, the host acts as a moderator, as he or she questions the guest and the experts, who freely render their opinions and judgments about the issue and the people involved.

2. 建议他(她)应该怎样做 mas aw madw ii nol doum os guiyaq ellis z ii . ii 81

While this format apparently makes good television, it almost always reflects the media's tendency to emphasize personal problems over social issues, emotional feelings over intellectual ideas, concrete events over abstract ones, and stirring stories over those that require thought and reflection. Although the issues and stories are ripe for the critical-thinking approach of sociological analysis, they rarely receive that type of attention.

A notable exception, however, may be the Bertice Berry Show, based in Chicago but broadcast to a nationwide television audience of over a million viewers. Bertice Berry received her Ph. D. in sociology from Kent State University. And she routinely draws on her academic background on her show. When asked how her program differs from other television talk shows, she replied:

"It's more sociological... I don't know how to think other than as a sociologist... I have

drawn on my sociological training to identify what are the key questions to ask guests... I am trying to force the sociological imagination on people even if they don't know it. "noting allowed as ...

5. The argument that the author tries to present in this passage is that television talk show should be

New Words	and Expressions
genre n .	种类; 类型; 风格; 体裁 anixovorg-inguodi siom .A
controversial a	causing public discussion or argument 引起争论的;有争议的
format n .	1. shape, size, binding etc. of a book (书的) 版式, 开本, 装订等
	2. general arrangement, plan or design of sth. 总体安排, 计划, 设计
	3. arrangement or organization of data for processing or storage by a computer 格式
n the dist centu-	arrange in a particular format, usu. for a computer 编排格式,格式化
celebrity n.	[c] famous person 名人 [u] fame, reputation 著名, 名望
unwed a.	According to the Bureau of Labor Statistics, about 2 的新知識的 will
	1. give sth in return or exchange 回报; 归还 1 kold ad bus 0002 1sav
	2. cause to be in a certain condition 使处于某种状态
ween now and the	19 de skill level that will be required of the new w 無
intellectual a.	having the power of mind to reason and acquire knowledge 智力的
niticians are all	intellectual person 知识分子; 脑力劳动者 soubs at (言語) bossel rows
concrete a.	1. existing in material form 具体的; 实体的
a has historically	2. definite; exact 明确的 that simple fact 明确的
ations overlooked	drawn new workers-young adults-is becoming mainly made up of mi土凝累 Popul
stirring b and a co	wery exciting 令人兴奋的;激动人心的 won brow broll supposed-berough to
routinely ad.	usually; habitually; regularly 惯例地; 例行地 mentoo to supol and won one
draw on monos	The report says; "As America heads toward a 用声的声,用声 sauchsive
t. Unless we act	ate, educated workforce is essential to our ability to compete in the world marke
Reading Comp	now, we will face a serious shortage of skilled workers." noisenshare
Directions: The	passage is followed by five questions. For each of them there are four choices marked
A, B , C and D .	**Choose the best answer. The nation will become reward to the best answer.
1. According to t	the passage, most television talk shows are similar in terms of mee of the state of
A. discussion	And while many warry that the aesorq b. B. do few workers by the year 2000, the
C. format	that this may not reflect "an overall treatnos' . Or kers", but the declining numbers a
2. The author's	attitude toward the current situation of television talk shows could be described as
•	der. " Of course, this is another question to this topic.
A. negative	B. emotional
C. critical	Reading Comprehension syttised .d
3. It can be infer	rred from this passage that mass media tends to appeal to rather than
•	A, B, Cand D. Choose the best answer.
A. wisdom, e	1. In America, the needs onoses, esenser Bs in the 21st century have benoitom
C. social issu	es, personal problems and 8 D. details, imagination doing suches a .A
4. The word "s	ociological" in this passage might refer to something that is characteristic of

2. By the 2000, the required workers would

A. males and females of enough you and are the B. a group of people assignations of more than the beautiful and the same a

C. a specific person it would have D. a minority community isoleigos and social of

5. The argument that the author tries to present in this passage is that television talk show should be

A. more thought-provoking

B. directed to working class

C. dealing with abstract but personal matters D. less intellectually directed

2. general arrangement, plan or design of sth. 总体支撑、计划、设计 Section C gross to guessiand for the boundaries of the management of the section C gross to guessian the section C gross to gross the section C gross the section

Will America produce enough competent workers to meet the nation's needs in the 21st century? That question lies at the heart of the most recent dispute over this country.

According to the Bureau of Labor Statistics, about 21 million new workers will be needed by the year 2000 and the fastest growing occupations will be those that require the most educational preparation. A report predicts that the current average skill level of 21 to 25-year-olds is 40% lower than the skill level that will be required of the new workers needed by that year. Yet between now and the year 2000, about 80% of new workers will be women and minorities, groups whose members have ever lagged (落后) in educational achievement. Businessmen, educators and politicians are all concerned.

The basis of the concern is the simple fact that the natural pool which America has historically drawn new workers-young adults-is becoming mainly made up of minorities. Populations overlooked or ignored-because there were more than enough young white males to fill the nation's job demandsare now the focus of concern about the future workforce.

The report says: "As America heads toward a more demanding skill-intensive economy, a literate, educated workforce is essential to our ability to compete in the world market. Unless we act now, we will face a serious shortage of skilled workers."

It should be clear, from the above, that much of this concern about the future of America's workforce may not be unreasonable. The nation will become more dependent on women and minority workers; at the same time they will become better trained and better educated.

And while many worry that there may be too few workers by the year 2000, the BLS has noted that this may not reflect "an overall lack of workers", but the declining numbers are in the younger age groups in the labor force. In fact, the BLS reported, "The workforce of the future will be older." Of course, this is another question to this topic.

Reading Comprehension

Directions: The passage is followed by five questions. For each of them there are four choices marked A, B, Cand D. Choose the best answer.

- 1. In America, the needs of competent workers in the 21st century have become

A. a serious problem to nation

B. the key point of recent discussion

C. a matter concerning the whole nation D. a problem in everyone's mind

2. By the 2000, the required workers would ____

B. go in for the fastest growing occupations

D. reach 21 million totally

- A. be skilled ones
- C. have received higher education
- 3. 80% of the new workers will
 - A. require the most educational preparation
 - B. be those whose skill level is below standard
 - C. come from groups other than the white males
 - D. be competent workers
- 4. What is the focus of concern about the future workforce?
 - A. Populations who have received little attention.
 - B. Young white males who are badly needed.
- C. The education of women. Of solome 1 inbluow algoring and of the result if
 - D. The nation's job demands. and so a solution and solution and some operation of the nation's job demands.
- 5. We would be short of skilled workers if _______. gs , aboom a belong garden a mind and
 - A. we did not show great concern for this matter
 - B. we ignored the shortage of skilled workers
 - C. we did not train the existing workforce
 - D. we didn't act to better educate the future workforce cinogens, which means that long-term smoking can amount to a death sentence



without it. To greate concentration, reduce anxiety, relieve pain, and even dampen their appendes (thus and an increase in susceptibility to seizures and hypothermia.

9

Unit Two Million Color of the Police of the

B. go in for the fastest growing occupations

Section A

4. What is the focus of concern about the future workforce? A. Populations who have a gain and Smoking and Smoking.

A. be skilled ones

3. 80% of the new workers will

D. be competent workers,

C. have received higher education

A. require the most educational preparation

B. be those whose skill level is below standard

C. come from groups other than the white males

B. Young white males who are badly needed.

If it weren't for nicotine, people wouldn't smoke tobacco. Why? Because of the more than 4000 chemicals in tobacco smoke, nicotine is the primary one that acts on the brain, altering people's moods, appetites and alertness in ways they find pleasant and beneficial. Unfortunately, as it is widely known, nicotine has a dark side: it is highly addictive. Once smokers become hooked on it, they must get their fix of it regularly, sometimes several dozen times a day. Cigarette smoke contains 43 known carcinogens, which means that long-term smoking can amount to a death sentence. In the US alone, 420,000 Americans die every year from tobacco-related illnesses.

Breaking nicotine addiction is not easy. Each year, nearly 35 million people make a **concerted** effort to quit smoking. Sadly, less than 7 percent succeed in **abstaining** for more than a year; most start smoking again within days. So what is nicotine and how does it **insinuate** itself into the smoker's brain and very being?

The nicotine found in tobacco is a **potent** drug and smokers, and even some scientists, say it offers certain benefits. One is enhancing performance. One study found that non-smokers given **doses** of nicotine typed about 5 percent faster than they did without it. To greater or lesser degrees, users also say nicotine helps them to maintain concentration, reduce anxiety, relieve pain, and even **dampen** their appetites (thus helping in weight control). Unfortunately, nicotine can also produce **deleterious** effects beyond addiction. At high doses, as are achieved from tobacco products, it can cause high blood pressure, distress in the **respiratory** and **gastrointestinal** systems and an increase in **susceptibility** to **seizures** and **hypothermia**.

First isolated as a compound in 1828, in its pure form nicotine is a clear liquid that turns brown when burned and smells like tobacco when exposed to air. It is found in several species of plants, including tobacco and, perhaps surprisingly, in tomatoes, potatoes, and eggplant (though in extremely low quantities that are **pharmacologically** insignificant for humans).

As simple as it looks, the cigarette is highly engineered nicotine delivery device. For instance, when tobacco researchers found that much of the nicotine in a cigarette wasn't released when burned but rather remained chemically bound within the tobacco leaf, they began adding substances such as ammonia to cigarette tobacco to release more nicotine. Ammonia helps keep nicotine in its basic form, which is more readily vaporized by the intense heat of the burning cigarette than the acidic form.

Most cigarettes for sale in the US today contain 10 milligrams or more of nicotine. By **inhaling** smoke from a lighted cigarette, the average smoker takes 1 or 2 milligrams of vaporized nicotine per cigarette. Today we know that only a **miniscule** amount of nicotine is needed to fuel addiction. Research shows that manufacturers would have to cut nicotine levels in a typical cigarette by 95% to **forestall** its power to addict.

When a smoker **puffs** on a lighted cigarette, smoke, including vaporized nicotine, is drawn into the mouth. The skin and lining of the mouth immediately absorb some nicotine, but the remainder flows straight down into the lungs, where it easily **diffuses** into the blood vessels lining the lung walls. The blood vessels carry the nicotine to the heart, which then pumps it directly to the brain. While most of the effects a smoker seeks occur in the brain, the heart takes a hit as well. Studies have shown that a smoker's first cigarette of the day can increase his or her heart rate by 10 to 20 beats a minute. Scientists have found that a smoked substance reaches the brain more quickly than one swallowed, **snorted** (such as cocaine powder) or even injected. Indeed, a nicotine molecule inhaled in smoke will reach the brain within 10 seconds. The nicotine travels through blood vessels, which branch out into **capillaries** within the brain.

Capillaries normally carry nutrients but they readily accommodate nicotine molecules as well. Once inside the brain, nicotine, like most addictive drugs, **triggers** the release of chemicals associated with **euphoria** and pleasure.

Just as it moves rapidly from the lungs into the bloodstream, nicotine also easily diffuses through capillary walls. It then **migrates** to the spaces surrounding **neurons-ganglion** cells that transmit nerve impulses throughout the nervous system. These impulses are the basis for our thoughts, feelings, and moods. To transmit nerve impulses to its neighbor, a neuron releases chemical messengers known as neurotransmitters. Like nicotine molecules, the neurotransmitters drift into the so-called **synaptic** space between neurons, ready to **latch** onto the receiving neuron and thus deliver a chemical "message" that triggers an electrical impulse.

The neurotransmitters bind onto receptors on the surface of the recipient neuron. This opens channels in the cell surface through which enter ions, or charged atoms, of sodium. This generates a current across the **membrane** of the receiving cell, which completes delivery of the "message". An accomplished **mimic**, nicotine competes with the neurotransmitters to bind to the receptors. It wins and, like the **vanquished** chemical, opens ion channels that let sodium ions into the cell. But there's a lot more nico-

tine around than the original transmitters and a much larger current spreads across the membrane. This bigger current causes increased electrical impulses to travel along certain neurons. With repeated smoking, the neurons adapt to this increased electrical activity, and the smoker becomes dependent on the nicotine.

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