

ELT in Mexican Higher Education should be Mainly ESP, not EGP

By Paul Davies, Senior Consultant, The British Council, México
pjdavies@megared.net.mx

Introduction

Virtually all Mexican institutions of higher education (IHEs) provide English courses for their students nowadays. These are overwhelmingly courses in English for General Purposes (EGP), not English for Specific Purposes (ESP). More ESP is offered in the top private IHEs, but English is not generally a great problem there, anyway: most of their students enter with a fair command of the language, and their English is sometimes good enough for major subject courses to be taught in English. My concern here is not with these top IHEs, but with the others - public IHEs and less privileged private ones - where, in fact, the vast majority of students in higher education are to be found.

In those IHEs most students enter with beginner or low elementary English, and this is a notable problem and academic disadvantage. This very low level of English, even after 6 years of English classes at school, has been confirmed by research reported in González et al (2004). With little, sometimes virtually no English on entry, should the students in these IHEs be provided mainly with EGP courses, as at present, or mainly with ESP courses? Here are typical arguments for the alternatives:

For EGP: It is asserted, or just unquestioningly assumed, that learners need a solid basis of EGP before moving on to ESP and the students entering most IHEs do not have that. Most English courses in IHEs should therefore be EGP in order to establish that basis.

For ESP: Unlike the English-learning population at large, the learners in IHEs are nicely grouped into professional or occupational areas - mechanical engineering, medicine, business administration, nursing, etc. The main reason for providing them with English courses in IHEs is to help them develop as fully as possible in those professional or occupational areas. Most English courses in IHEs should therefore be ESP from the start.

Apart from these typical arguments, there are, of course, others, and some quite substantial reasons, for either alternative. I shall be exploring them in this article on the way to my conclusions and proposals.

The current ELT scene in most Mexican IHEs

There are exceptions, but broadly speaking the current situation in Mexican IHEs is as follows. All state autonomous universities (*universidades autónomas públicas*) have long had EFL programmes for their students and most other IHEs (universities, technological institutes, polytechnics, etc.), public and private, have followed suit. The obvious rationale for establishing these programmes is to help IHE students acquire a good working command of English so that they have increased access to professional information--and especially the latest information, can handle work situations requiring English, can participate in international conferences and seminars, can (if they are among the lucky or worthy few) take postgraduate courses overseas, etc.

In most IHEs (excluding the top private ones, of course), the English programme starts at false beginner level (some begin with a "Starter" book, not even a false beginner "Book 1"), and the bulk of the students are in beginner, elementary and lower intermediate courses. The IHE programmes vary greatly. Many require all students to "complete" a given number of English courses, usually with no reliable evaluation of their level of proficiency at the end of the programme. Some IHEs provide courses, and often other English learning resources, exclusively for their undergraduates, while other IHEs mix their undergraduates with the general public. Some require their students to pass an English proficiency test to be able to graduate professionally, and they provide courses and resources to help them get there. But these tests vary greatly in validity and reliability, ranging from the IHE's own test (often in conditions of low reliability, e.g. applied and graded by course teachers), through a set minimum score on the Institutional TOEFL (no longer considered to have much validity), to a set minimum score on the full new TOEFL or a similar prestigious test (not strictly enforced by any IHE I know as a condition for graduating).

Unfortunately, there appears to be no solid study of the level of English of students graduating from Mexican public universities and other IHEs (to complement the González 2004 study of students entering IHEs, cited above). However, from over a decade of giving COTE, an open British BA, and other teacher training and programme consultancy in over a dozen state autonomous universities and one technological university (*Universidad Tecnológica Cd. Netzahualcóyotl*), I have the strong impression that very, very few graduating students would pass FCE (or get a middling score in new TOEFL) and many would fail PET (a low new TOEFL score). Also, relatively few teachers of majors (engineering, medicine, business administration, etc.) appear to have a good command of English, and in some IHEs, virtually none. That situation should have changed through generational shift given that there have been English programmes for students in most IHEs for one, two or more decades now, i.e. an increasing number of teachers of majors themselves had English courses as undergraduates in an IHE, but presumably not very effective courses.

A fair conclusion from all this is that these English programmes, overwhelmingly EGP, have generally not been very successful to date. I believe they have not met most IHE students' and graduates' needs either.

Why is EGP not generally appropriate for IHE students, even beginners?

Most IHE English courses use international EGP textbooks. Even though I have co-authored several, I question whether they - or rather the EGP courses based on them - are appropriate for most IHE students. This is why I think, generally, they are not: some of the "general purposes" included in five of the most widely used EGP textbooks are "shopping", "discussing life styles", "talking about TV viewing habits", "talking about clothes", "describing neighbourhoods", "describing people's appearance", "talking about health problems", "ordering a meal", "describing personality", "talking about movies and books", "interpreting body language", "talking about festivals and customs", "checking into and out of a hotel", "requesting hotel housekeeping services", "describing a car accident", "renting a car", "discussing driving rules", "describing your mood and emotions", "cheering someone up". Yes, "cheering someone up" - perhaps students will do their English teachers the favour once they have been taught how.

Most Mexican engineers (to take a professional area with many branches and many graduates of Mexican IHEs) will never travel abroad in their whole life, and if they do once or even several times, they can usually manage perfectly satisfactorily without English, especially with Spanish in the USA. The overwhelming majority will never ever (outside ELT classroom tasks or simulations) discuss life styles, talk about clothes, order a meal, describe someone's personality, or appearance, rent a car, interpret body language or try to cheer someone up in English. But many may often need to consult technical manuals, read up on recent advances in professional practices and technology, talk business with a foreign engineer or executive visiting their company, etc., in English.

I hear from teachers and have seen in numerous class observations in IHEs that many of the students are not very engaged by the EGP classes they are required to attend. Perhaps their minds are too occupied and preoccupied with their majors - medicine, engineering, accountancy, dentistry, electronics, etc. - which, along with whatever personal and social lives they find time for, must fill most of their thoughts, leaving little space for EGP. There is no guarantee that they would respond significantly better to ESP courses, but those courses would at least have more face validity. ESP courses might not lead to higher levels in the English of IHE graduates than those currently being achieved (though they should), but they will certainly offer them more of the English they will most likely need, and require them to spend much less time, effort and concern on English they are unlikely to need.

Why is most ELT in Mexican IHEs EGP and not ESP?

Here are four probable reasons why Mexican IHEs offer mostly EGP courses to their students, not ESP courses, in spite of the obvious appropriateness of these:

Most of the people who originally set up the English programmes in IHEs and the teachers who first taught them came from EGP backgrounds and ESP was outside the "box" they thought in.

Though many, perhaps most, course directors and teachers now have a BA (or above) in ELT or applied linguistics and know about needs analysis and ESP, they still tend to think ESP can only be done after a strong EGP base is established, and since most students in most IHE English programmes are in beginner to lower intermediate level groups, they are, supposedly, "not ready" for ESP.

Only EGP textbooks are readily available and accessibly priced (ESP books are usually expensive and seldom stocked by distributors), and producing good materials for all ESP areas in-house would be a massive, expensive and risky project for an IHE (large scale materials production is "what publishers do", but not what IHEs are set up to do or experienced in doing).

Most IHE English programmes are well established as EGP programmes and a shift to mainly ESP programmes would require radical restructuring of ELT, which would mean an enormous amount of work, and possibly a substantial investment.

Consider the last reason first. A shift to ESP would indeed require IHEs to carry out a major restructuring of their ELT, assuming it is currently totally or largely oriented towards EGP. But if most of their students really need ESP more than EGP (and certainly more than learning how to shop, describe people's appearance, describe car accidents and cheer people up in English) and are in general likely to respond to it better, surely IHEs are morally and professionally obligated to make that shift. If, on top of that, an IHE has a BA in ELT (and perhaps an MA), from which most of their new teachers come (the case in most state autonomous universities now), in which needs analysis, learner-centredness, ESP, etc., are dealt with, surely it is unprofessional, and even unethical, not to apply these in the IHE's own ELT programmes.

Reason 1 (the EGP orientation of people who first set up IHE English programmes) is history. Though the past can exert a powerful influence on the present, it should not stop appropriate change, and certainly not much needed change. Reason 2 (the belief that ESP requires a strong EGP base) is, I believe, a fallacy, rather like the old one about people needing a good base of grammar and vocabulary before they should try to develop conversation skills. And just consider when medical students, for example, should start trying to read in English - after they have completed several semesters of EGP courses (and learnt how to shop, describe car accidents, etc.), or in their first semester in the School of Medicine?

That leaves reason 3 (the non-availability of accessibly priced published ESP materials - and the all too ready availability of EGP materials). This is a powerful reason for doing EGP instead of ESP, and it was mentioned in an article 33 years ago, when ESP was just getting started in Mexico and elsewhere (and was still called "English for special purposes"):

This article points out the difficulties teachers have in selecting suitable materials for teaching English for special purposes. Universal textbooks, designed to suit all possible situations, are not specific enough. The article proposes ways in which a broader spectrum of materials might be obtained: (1) by producing textbooks with optional components, or (2) by producing a number of specialized textbooks. In the meantime, however, universal textbooks prevail, especially in developing countries, and the teacher is therefore burdened with the extra task of adapting these textbooks to specific situations.*

Payne (1975, p. 30)

*Or, as has been said, "designed for no particular situation at all".

Today, 33 years later, EGP textbooks still prevail, and although specialized (ESP) textbooks have existed for some time, they are costly and not generally available in Mexico and the developing world. Also, some EGP textbooks do have specialized optional components now, though usually only for business, but their design as supplementary material generally means extra cost and extra time on top of the main EGP textbook.

All this adds up to a vicious circle, resistant to change. Neither most EFL course directors and teachers in IHEs nor most EFL publishers are eager to shift from EGP to ESP. But conscientious ELT professionals, knowing the IHE situation and having their students' needs at heart, should be.

Why should IHEs move from EGP towards ESP, even at beginner level?

The main points or arguments responding to this question have been made above, but it is appropriate to pull them together here before proceeding.

EGP courses for IHE students are not generally working well: many students are not engaged by them, and results are, with a few exceptions, not good.

The main goal of English courses for IHE students - to enable them to access professional information in English, handle work situations requiring English, etc. -

would clearly be pursued better through ESP than EGP. A more focused ESP orientation might also engage students not engaged much by the broad, often personally irrelevant language and aims of EGP (few graduates of the IHEs I am talking about will do much, if any, shopping, driving, eating out, socializing, etc., in the USA or elsewhere abroad).

The argument that a solid basis of EGP is needed for ESP is a fallacy; even complete beginners can - and outside classrooms, do - start by learning work related or personal interest related English, not the English of typical EGP textbooks. Also, many IHE students need English in their major from the word go and cannot wait for ESP.

It is worth adding that ESP has its roots in the movement towards functional, learner-centred teaching of the late 1970s and the 1980s, i.e. the movement towards "modern era" ELT, where, supposedly, we are now. In their first chapter, "The Origins of ESP", Hutchinson & Waters (1987) have three sections: "The demands of the Brave New World" (international English for specific professional and occupational needs, not just for general educational accomplishment), "A revolution in linguistics" (from general grammatical rules, etc., to communicative competence in specific uses of English), and "Focus on the learner" (which speaks for itself). ELT in Mexican IHEs generally purports to accept these "modern" perspectives, but somehow tends to ignore that they imply, or virtually demand, ESP in higher education.

How could IHEs move from almost entirely EGP to much more ESP?

At present, I see two viable ways to achieve a general, and successful, shift from EGP to ESP in IHEs, or rather, I see two agents/implementers of change: a group of progressive IHEs, or publishers that see an opportunity (the two might even work together). What is needed for widespread change to occur is the production of pedagogically organized, readily available and affordable sets of ESP materials, starting preferably at false beginner level, the level of most students entering IHEs.

Although it would be a massive, expensive and risky project for a single IHE to try to produce coherent sets of ESP materials for all the areas that need them, it might be possible, with strong central coordination, for a group of IHEs to do so. In fact, something on those lines has been attempted by The British Council and several state autonomous universities in Mexico - but only with free-standing "learning object" materials for learners with a fair level in English, not the pedagogically organized sets of materials (syllabus-based materials) starting at beginner level that I am proposing here. Brazilian universities have also collaborated on a fairly large scale ESP project (Celani et al 2005, Rajagopalan 2006). However, one major problem with this IHE group option is "politics" (need I say more?). Another is what might be called "hyper-academicism" - a reluctance to use theory for a framework

and general guidance only and proceed with materials production pragmatically, as publishers usually do (pragmatism is a dirty word in some academic-scientific circles, even though it has always been a key component of human intelligence). I sense that "hyper-academicism" has been a problem in the Brazilian project since I perceive from my visits to Brazilian IHEs that the situation is generally no better than in Mexico.

If IHEs do not, or cannot, develop a major ESP materials project together, perhaps one or more publishers can, and will, do it for them. However, they would have to take a major decision about their publishing strategy, departing from the "universal textbooks" that have "prevailed" so far, to offer a new kind of product, accessible ESP, for the IHE market. They would first have to feel absolutely sure that there was a large market for ESP materials in IHEs. Given that the young adult market, including IHEs, is flooded with EGP textbooks and some of them are not profitable for the publisher, it is not impossible that one or more publishers will see the opportunity and take the initiative some time soon. They would then have to overcome the problem of the costly and challenging segmentation of the potential ESP market - production and distribution of many different ESP textbooks or digitalized sets of materials for small markets (instead of a single EGP textbook for a large market).

Part of the solution to the segmentation and cost problems, for either a publisher or a group of IHEs, could be to shift largely from print to digital storage and delivery. The time is ripe, and, of course, both publishers and IHEs are already using digital technology widely (IHEs in language self-access centres), but not, to my knowledge, for such a large, mass-consumption, low-cost materials project as I am suggesting. On the other hand, it is probable that many IHEs will want printed textbooks for classroom use for the foreseeable future, so it might not be realistic to stop offering at least the option of printed books. Here is an idea for combining digital and print formats, and, in fact, also combining EGP and ESP.

There could be slim, printed EGP textbooks for the different levels, which would serve as common core classroom material for all students. Then there could be ESP materials for the different groups of students according to their areas of study, stored digitally and delivered electronically (which could be printed out for classroom use if required). The common core EGP textbook could be about half the size of typical international EGP textbooks and, therefore, much less time-consuming and cheaper than they are. It would work, in EGP contexts of likely interest and potential usefulness for IHE students, on the basic grammar and vocabulary that virtually all uses of English share. Then, departing from and consolidating the language and functions in that "syllabus", the ESP material would extend work to the specific language, discourse and skills needs of the different groups of IHE students - English for medicine, for engineering, for business, for tourism, etc. (see Appendix). The common core EGP textbook would give the publisher (or group of universities) a profitable printed product to sell to everyone,

compensating for the fragmented market for the ESP materials (though these could also be economically viable, especially if delivered largely electronically). The core EGP textbook and the ESP materials together would require a similar investment of learner time and money to that currently required by a typical EGP textbook alone. However - the big gain - the combination would so obviously be much more appropriate for IHE learners.

These are just a few ideas, the best I can come up with for now, 33 years after Payne's suggestion of either optional ESP components for "universal textbooks" or complete ESP textbooks. Other heads and confabulations of heads in IHEs and/or publishers can surely come up with more, perhaps better ideas.

Conclusion

I hope I have largely convinced you, if you were not convinced already, that most IHEs in Mexico (and elsewhere in the developing world) should be providing their students with much less EGP and much more ESP. Also, that this shift from EGP towards more ESP can, and should, be started from beginner level, where most students entering Mexican IHEs are in English. However, I recognize that there are substantial obstacles, human and practical, to overcome for this shift from EGP to ESP to be achieved.

It would, in fact, be appropriate that ELT for IHE students should be entirely ESP, but that would involve great complexity and cost - major obstacles to the proposed shift. And, since all ESP branches share common grammar, lexis and discourse features, complexity and cost could be reduced by teaching all students "common core EGP" with the same printed materials and, if necessary or convenient, in classes with students from different majors mixed together. Complexity and cost could also be reduced by storing ESP materials digitally and delivering them electronically. Students could access these materials through IHE computer/self-access centres or through their own PCs. If required, the ESP materials could be printed out and worked on in classrooms.

The human obstacles to this proposal to shift ELT for students in IHEs from EGP towards ESP may be greater than the technical and practical ones. For a group of IHEs to get together in order to produce the necessary materials, there needs first to be a group of shakers and movers within several IHEs with the understanding and the will to push the project. They will undoubtedly face "political" resistance. If they get past that, they will need to watch out for "hyper-academicism" as the project goes forward - too much obsession with theory and detail, and the project will not go forward, but will lose momentum and may even become the subject of innumerable studies and research papers instead of being an efficient factory producing the large amount of good ELT material required to enable a widespread shift from EGP to ESP.

For publishers to produce the necessary materials, they need to perceive a good market for ESP materials in IHEs - at least a few EFL course directors and teachers already attempting ESP and many more who are eager, or at least inclined, to stop drifting with the inertia of EGP and start thinking proactively and innovatively about the students' obvious needs in IHEs - needs that have always been staring us in the face. If good ELT publishers see that, they will be professionally as well as commercially interested. They - or the first of them to decide to go for it - will then need to solve the problems of market segmentation, complexity, cost, etc., developing ideas like those suggested above.

The aim of this article has been to instigate a widespread shift from EGP to ESP in IHEs, in Mexico, and then perhaps, around the developing world. I know that is very wishful thinking, some might even say totally wild thinking. In fact, I will be more than satisfied if this article contributes a little towards a marked increase in ESP in many Mexican IHEs. I pray at least that someone will not come across this article in 33 years time, as I came across Richard Payne's 1975 article this year, and say, "Well, sad to say, nothing much has changed in ELT in Mexican institutions of higher education".

Of course, the best possible change for Mexico as a whole would be if virtually all students entering IHEs brought with them, from school, at least a lower intermediate command of English (and IHEs expected and even demanded that). If that were to happen, and also if virtually all teachers of majors in Mexican IHEs had at least an upper intermediate command of English (because IHEs demanded that), ELT in IHEs would no longer be such a big problem. The boom in beginner-elementary ELT in Mexican IHEs would be over. Good riddance to it! A much healthier and happier boom in intermediate-advanced ELT, perhaps in many schools as well as in almost all IHEs, might be well under way. Mere wishful thinking? Perhaps, but let's hope not.

References

- González Robles, R., Vivaldo Lima, J. & A. Castillo Morales (2004). *Competencia Lingüística en Inglés de Estudiantes de Primer Ingreso a las Instituciones de Educación Superior del Área Metropolitana de la Ciudad de México*. Mexico City: ANUIES and UAM, Ixtapalapa
- Hutchinson, T. & Waters, A. (1987). *English for Specific Purposes: A learning-centred approach*. Cambridge: Cambridge University Press
- Payne, R. M. (1975). Universal Textbooks and English for Special Purposes. In *Edutec* no. 6. UAM, Naucalpan (available through ERIC: Education Resources Information Center at <http://eric.ed.gov/>)
- Rajagopalan, K. (2007). Review of *ESP in Brazil: 25 Years of Evolution and Reflection* (Cela et al, eds. 2005. EDUC and Mercado de Letras, Sao Paulo and Campinas). In *English for Specific Purposes* vol. 26 no. 4

Appendix: An example

The following material is for students of medicine, nursing and other health areas who are false beginners in English. From it, you should be able to visualize the EGP core material that these students would have worked with in class before following up with this ESP material, either on a computer or also in class with printouts. The same EGP core material would be used by students of engineering, business, electronics, etc., etc., before they turn to their own ESP material, which you should also be able to visualize.

1 Meeting hospital staff

a Listen and read.

Hobbs: Nurse, meet our new resident, Sandra Torres.
HOSPITAL]

Brenda: Hi, I'm Brenda Smith. Nice to meet you.

Sandra: Nice to meet you too, Brenda.

Hobbs: Ah, it's 12:30. That's my patient over there. Can you show Sandra around, Brenda?

Brenda: Sure, doctor. Well, Sandra, first meet Alicia, our receptionist.

Alicia: Hi! Where are you from, Sandra?

Sandra: Mexico. But this is my second year in the USA.

Alicia: OK. Well, welcome to Rome County Hospital.

Sandra: Thanks. It's nice to be here.

Brenda: Right, let's look around. This way.

Sandra: Doctor Hobbs is very nice.

Brenda: Yes, he is. And he's a brilliant surgeon.

[ILLUSTRATION OF
PEOPLE IN

b Select the correct completions, a, b or c.

- 1 A resident is a) a nurse b) a junior doctor c) a patient in hospital.
- 2 Brenda is a) a doctor b) a resident c) a nurse.
- 3 Sandra and Hobbs are a) patients b) doctors c) surgeons.
- 4 Sandra is a) Mexican b) from the USA c) in Mexico.
- 5 The hospital is in a) the USA b) Mexico c) Italy.

2 People in hospitals

a Match the words and the pictures.

[ILLUSTRATIONS: A. NURSE B. PATIENT C. SURGEON D. RECEPTIONIST E. ANESTHETIST]

- 1 receptionist D 2 nurse 3 anesthetist 4 patient 5 surgeon

b These are the positions of doctors in US hospitals. What are they in your country and language?

Attending Physician

Senior Resident ↗

Resident ↗

Intern ↗

c Listen to words from a and b. Number the order of the words. Practice the pronunciation.

__ anesthetist __1 attending physician __ intern __ nurse __ patient __ senior resident __ surgeon

3 Places in hospitals

[ILLUSTRATION OF
HALLWAYS IN
HOSPITAL WITH
SIGNPOSTS]

a Look at the picture. Read the signs (cafeteria, pharmacy, etc.).

b Write words from the signs under the pictures.

[ILLUSTRATIONS/ICONS OF: 1. PRIVATE ROOM 2. HOSPITAL PHARMACY 3. CHILDREN'S WARD
4. OPERATING THEATER 5. MATERNITY WA RD 6. DOCTOR'S OFFICE 7. MEDICAL
LABORATORY]

1 private room 2 _____ 3 _____ 4 _____

5 _____ 6 _____ 7 _____ 8 _____

c Listen to the words and practice the pronunciation.

4 Looking around a hospital

a Listen and read.

Brenda: OK, Sandra? Just look at the signs. The cafeteria is that way, left, and...

Man: Excuse me. Where's the pharmacy?

Brenda: It's that way, to the left.

Man: OK. And where are the private rooms?

Brenda: They're the other way, down this hall to the right.

[ILLUSTRATION -
SAME
AS MAIN
ILLUSTRATION
ABOVE BUT WITH
THE PEOPLE IN THE
CONVERSATION]

Sandra: Look, there are signs on the wall.

Man: Oh, yes! Sorry! My wife...

Brenda: No problem. You're welcome.

Man: Thank you, thank you.

Brenda: Well, let's start with the children's ward. There are 20 beds, and it's divided into...

b Select the correct completions, a, b or c.

- 1 The cafeteria is a) to the right b) in a ward c) to the left
- 2 The man is a) a doctor b) a visitor c) a patient
- 3 He is in a) the hall b) the pharmacy c) a private room
- 4 His wife is in a) a ward b) the pharmacy c) a private room
- 5 The children's ward is a) a private room b) for twenty patients c) to the left

5 Conversations in hospitals

a Complete the conversations with phrases from the box.

Conversation 1

A: Hi, Bob. 1 H, Fred Hill. Fred, this is Bob Clark, our top anesthetist.

B: Nice to meet you, Fred. 2 _____ around here?

C: No, I'm not. 3 _____ Boston.

B: Well, 4 _____, and to Pacific Shore Hospital.

C: Thanks.

[BOX:

- | | |
|-------------------------|----------------------|
| A this way | B Excuse me |
| C You're welcome | D I'm from |
| E welcome to California | F It's down the hall |

Conversation 2

A: 5 _____ Is the maternity ward 6 _____?

ward]

B: Yes, it is. 7 _____.

A: Thank you. And 8 _____?

B: It's down this hall too, 9 _____.

A: Thanks a lot.

B: 10 _____.

- | | |
|--------------------------|-----------------------|
| G where's the laboratory | H Meet our new intern |
| I Are you from | J past the maternity |

b Listen and check.

6 The cardiovascular system

a Look at the 3 illustrations and read the 3 texts. Match the texts and the illustrations.

[ILLUSTRATIONS: A. SCHEMATIC DIAGRAM OF BLOOD CIRCULATION B. NURSE TAKING PATIENT'S BLOOD PRESSURE C. CROSS-SECTION OF HUMAN HEART UNDER EACH, "Text number ___" FOR STUDENTS TO WRITE CORRESPONDING NUMBER OF THE TEXT]

1. The mammalian heart, including the human heart, is not a single pump; it is two pumps. In each, there are two chambers, a total of four chambers in the heart.
2. The cardiovascular, or circulatory, system, consists of the heart, the lungs and the blood vessels. There are three distinct components in this system: the pulmonary circulatory system between the heart and the lungs, coronary circulation within the heart, and systemic circulation around the body, from and to the heart.
3. Blood pressure is the pressure of blood against the walls of blood vessels, normally the large arteries, i.e. systemic arterial blood pressure. Systolic pressure is the maximum pressure in the arteries in the cardiac cycle, and diastolic pressure is the minimum pressure in the cycle (the resting phase).

Note: i.e. = that is (from Latin "id est")

b Read texts A, B and C. Select 1, 2 or 3 in "This continues text 1 – 2 – 3".

A. Normal values for an adult human are approximately 120 mmHg (millimeters of mercury) systolic and 80 mmHg diastolic pressure, but there are large variations from person to person. There is also variation in an individual, from heartbeat to heartbeat and in the course of a day (the circadian rhythm).

This continues text 1 – 2 – 3

B. The right auricle receives impure blood from the body, and the right ventricle pumps it to the lungs. The left auricle receives purified, oxygenated blood from the lungs, and the left ventricle pumps it around the body.

This continues text 1 – 2 – 3

C. The function of the systemic circulatory system is to transport nutrients, e.g. glucose, and oxygen to every part of the body, and to transport carbon dioxide and waste away from the body.

This continues text 1 – 2 – 3

Note: e.g. = for example (from Latin "exempli gratia")

7 The cardiovascular system

a Complete this section of a high school class on the cardiovascular system. Use words from the box.

[BOX:

A body B nutrients C blood D left E minimum F arteries G lungs I waste J pressure K right
L maximum M pump]

The cardiovascular system is the heart, the 1 G and the blood vessels. This system transports 2 _____ and oxygen to the body, and transports carbon dioxide and 3 _____ from the body.

The heart is the 4 _____ for this circulatory system. In fact, it is two pumps. The 5 _____ ventricle pumps impure 6 _____ to the lungs. The 7 _____ ventricle pumps purified, oxygenated blood to the 8 _____.

The pumping heart creates blood 9 _____ in the system. This is the pressure of blood against the walls of the large 10 _____. Normal blood pressure for an adult is approximately 120 mmHg for systolic pressure (11 _____ pressure in the cardiac cycle) and 80 mmHg for diastolic pressure (12 _____ pressure in the cycle). Is your blood pressure OK?

b Listen to the class. Check your completed text.

[ILLUSTRATION: YOUNG AMERICAN BIOLOGY TEACHER GIVING A CLASS TO A HIGH SCHOOL GROUP, USING DIAGRAMS LIKE THOSE IN EX. 6 ABOVE]