Linguistic Clues for Developing Research Questionnaires on English e-learning in Engineering

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Abstract: - Questionnaires investigating foreign language acquisition in engineering via traditional or web-based methods are versatile, allowing the collection of both subjective and objective data through the use of open or closed format questions. Modern computers have only made the task of collecting and extracting valuable material more efficient. Just as well, they have made English learning easier, more interactive and accessible. Therefore we are currently confronted with clear progress and a shift in teacher/student roles, whose impact must be thoroughly investigated in point of effectiveness and possible unwanted side effects. However, a questionnaire is only as good as the questions it contains, and as relevant as its respondents/pools of subjects are. Many standards must be met before a questionnaire can be considered a sound research tool. The majority deal with making the questionnaire understandable and free of bias. Mindful review and testing are necessary to weed out minor mistakes that can generate significant changes in meaning and interpretation. When these guidelines are followed, the questionnaire becomes a powerful and economic evaluation tool. Additionally, when it is designed and applied together with students, it becomes a valuable instrument for developing their research abilities and furthering both their theoretical background and field research skills. The present questionnaire constantly generated data in 1999-2009, a relevant decade in investigating the Romanian learning and labour markets, and is a subsequent implementation of a *Leonardo da Vinci* program entitled: *Recipes for successful e-language teaching, Guidelines for the implementation of effective and dynamic language teaching in ODL environment.*

*Key-Words:*open distance learning, web-based English teaching in engineering, questionnaire, learning market

1 . Introduction

More information has been published in the last decade than in all previous history, and it is used mostly for making decisions about the future. Operating with accurate information increases the probability of good decisions. The implementation of this questionnaire aimed at gathering relevant data on English e-learning, simultaneously developing students' research skills. Theoretical background and field research abilities were enriched and practised, so that engineering students could get in touch with real life technology research, design, production and marketing as soon as possible. The participants were first and second year students, but also Master and PhD candidates. They got acquainted with methods of getting information: literature searches, talking to people, focus groups, personal interviews, telephone/ mail surveys, and their instrument – questionnaires.

1.1 Definition of research methods

A *literature search* involves reviewing all readily available materials: internal company data, relevant trade publications, newspapers, magazines, annual reports, company literature, on-line data bases, and any other published materials. It is a very inexpensive method, although it generally does not yield timely information (it takes 1-8 weeks).

Talking with people is helpful during the initial stages of a research project, being used for collecting information that is not publicly available, or that is too new to be found in the literature. Examples might include meetings with employers or junior employees, prospects, customers, suppliers, at trade shows, seminars, and association meetings. Although often valuable, the information has questionable validity because it is highly subjective and might not be representative of the population.

A *focus group* is a preliminary research tool meant to explore people's attitudes and ideas, testing new approaches and discovering ongoing concerns. Six to twenty people meet in a video/audio equipped conference room with a trained moderator. He leads the group's discussion and focuses on interest areas. Focus groups can be conducted within two weeks. The disadvantage is that the sample is small and may not be representative of the population in general.

Personal interviews are a way to get in-depth and comprehensive information. They are very expensive because of the one-to-one nature of the activity focused on personal or detailed data. Typically, an interviewer will ask questions from a written questionnaire and record the answers. Sometimes, it is simply a list of topics the researcher wants to discuss with an industry expert. The method is generally used only when subjects are not likely to respond to other survey modalities.

Telephone surveys are the fastest way of gathering information from a relatively large sample (100-400 respondents). The interviewer follows a prepared script that is essentially the same as a written questionnaire. Unlike the mail survey, the telephone survey allows the opportunity for opinion probing and generally lasts less than ten minutes. It is completed in 2-4 weeks and the costs are low.

Mail surveys are ideal for large sample sizes, or for wide geographic areas. They are cost effective (less than telephone interviews), but they take twice as long to complete (8-12 weeks). As there is no interviewer, there is no possibility of interviewer bias. Still, the main disadvantage is the inability to probe respondents for more detailed information.

E-mail and internet surveys are relatively new and little is known about the effect of sampling bias in internet surveys. While it is clearly the most cost effective and fastest method, the demographic profile of the internet user does not represent the general population, even if the situation is changing.

Planners should also consider whether other means of data collection are more adequate, such as:

- field experiments: the 'treatment' and 'control' groups react to a scenario devised by investigators,
- content analysis of newspapers or articles,
- direct observation (counting the number of schools in a district, or the number of students per teacher),
- non-directive interviews: pre-specified questions do not exist and the interviewer has much freedom in probing wide areas as well as specific issues.

1.2 Definition of questionnaires

A *questionnaire* is a survey instrument used to collect data from individuals about themselves or about a social unit. It is defined as standardized when each respondent is exposed to the same items and to the same system of coding answers. The aim is to ensure that differences in responses reflect differences among respondents, not discrepancies in the processes that generated those answers. Such questionnaires are often used in educational planning to collect information about various aspects of school systems, being performed by oral interviews (face to face, phone or self-administered).

Among the types of information collected by means of the present questionnaire are activities, facts, knowledge levels, opinions, expectations and aspirations, membership of various groups, attitudes and perceptions. In the field of educational planning, the data were classified into:

- inputs to education (school resources, background characteristics of schools, teachers or students),
- learning and teaching processes,
- education outcomes (such as attitudes towards school, student achievement, measures of school efficiency like survival rates etc.).

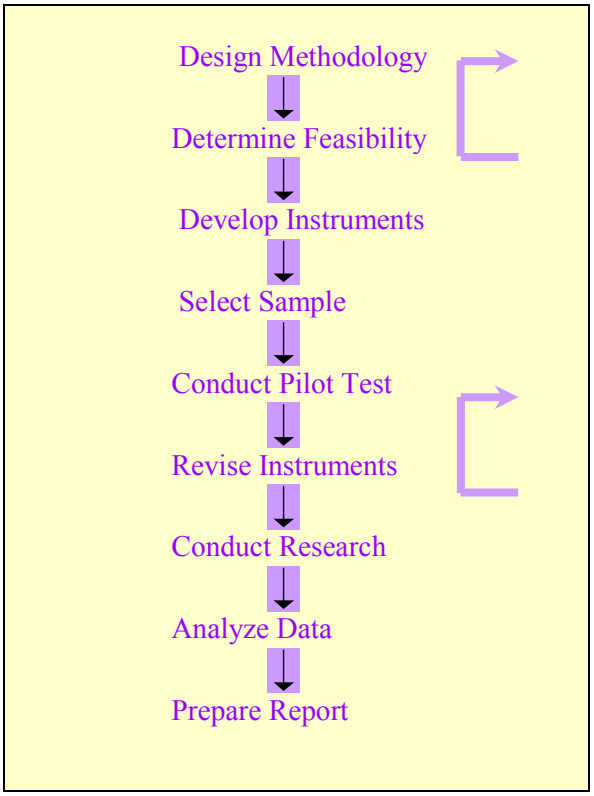
2. Problem Formulation: prospecting the Romanian learning and labor market to identify ODL opportunities. Questionnaire during 1999-2009

This questionnaire has been prospecting the Romanian learning market for ten years, within the time frame 1999-2009, in an attempt to identify significant dissatisfactions with the traditional instruction framework in the field of foreign languages in engineering. At the same time, it has focused on the proportion of young employees and students' options (irrespective of age) for English teaching on web-based platforms, together with the limitations and improvements that may emerge in this domain. It has been connected with European approaches from the very beginning, through the participation in a *Leonardo da Vinci* program.

Questionnaire design is a long process that demands careful attention. A questionnaire is a powerful evaluation tool and should not be taken lightly. Design begins with understanding what data a questionnaire can provide and how it can help the research activity. If it is to be used, the greatest care goes into planning the objectives. Questionnaires are like any scientific experiment: one does not collect data and then see if they found something interesting; one forms a hypothesis and designs an experiment to help prove or disprove the hypothesis.

2.1 Questionnaire research flow chart

Most problems with questionnaire analysis can be traced back to the design phase of the project. Well-defined goals are the best way to assure a good questionnaire design. Questionnaire research design proceeded in an orderly and specific manner. Each item in the flow chart depended upon the successful completion of all the previous items. There were two feedback loops in the flow chart to allow revisions of the methodology and instruments.



2.2 Advantages of written questionnaires

- cost effective, as compared to face-to-face interviews, especially in studies involving large sample sizes, wide geographic areas and increased number of research questions.
- easy to analyze. Data entry and tabulation for nearly all surveys can be easily performed with various computer software packages.
- familiar to most people, generally not making them apprehensive.
- reduced bias: uniform question presentation, no middle-man and no clues influencing the respondent.
- less intrusive than telephone/face-to-face surveys. The respondent is free to complete the questionnaire on his own time-table. Unlike other methods, he is not interrupted by the research instrument.

2.3 Disadvantages of written questionnaires

- probable low response rates, dramatically lowering confidence in the results. Response rates vary widely from one questionnaire to another (10% - 90%), but well-designed ones produce high response rates.
- inability to probe answers. Questionnaires are structured instruments and allow little flexibility to the respondent with respect to response format. The flaw can be compensated by giving enough space for comments, as they are among the most helpful information on the questionnaire, providing insights that would otherwise be lost or missed.
- unavailable visual indications, even if nearly 90% of all communication is visual. The lack of personal contact has different effects, depending on the type of information being requested. A questionnaire on factual information will probably be unaffected by the lack of personal contact, but one probing sensitive issues / attitudes may be severely altered.
- respondents may not be the targeted ones. Investigators assume that the respondent is the same person who received the questionnaire, but other family members or subordinates may fill it in.
- questionnaires are simply not suited for all people. For example, a written survey to a group of poorly educated people might not work because of reading skill problems. More frequently, people do not trust written questionnaires because of misuse.

2.4 E-learning in engineering, its context and market, investigated via questionnaires

Conventional e-learning systems are based on instructional packets delivered to students using Internet technologies. The role of the student consists in learning from the readings and preparing assignments, which are evaluated by teachers. In contrast, new e-learning approaches increase focus on social learning and use of social software such as blogs, wikis, podcasts and virtual worlds. The first ten years of e-learning focused on using the internet to replicate the instructor-led experience. Content was designed to guide learners through the content, providing interactions, experiences, assessments, and simulations. By contrast, new e-learning is built around collaboration. It assumes that knowledge is socially constructed as meaning and understanding. Learning happens via conversations and cooperation in problems and actions. Advocates of social learning claim that one of the best ways to learn something is to teach it to others. There is also an increased use of virtual classrooms (including online presentations delivered live) as an online learning platform for a diverse set of education providers. Social networks have been used to foster online learning communities around subjects as diverse as test preparation and language education.

Distance Education ranges over four to five generations of technology in its history (print, audio/ video broadcasting, audio/video teleconferencing, computer aided instruction, e-learning/online-learning, computer broadcasting /web casting). The growing popularity of mp3 players, PDAs and Smart Phones has provided an additional medium for the distribution education content, and some professors now allow students to listen or even watch videos of courses as Podcasts.

Distance learning is a field of education that focuses on the pedagogy, technology, and instructional systems designs that aim to deliver education to students who are not physically *on-site*. It is a process to create and provide access to learning when the source of information and the learners are separated by time and distance. It intends to create an educational experience of equal qualitative value for the learners, to best suit their needs outside the classroom. Rather than attending courses in person, teachers and students may communicate at times of their own choice, by exchanging printed or electronic media, or through technology that allows them to communicate in real time, and via other online modalities. Distance education courses that require on-site presence for any reason, including the taking of examinations, is considered to be a hybrid. This form of education provides opportunity and flexibility for both school-age and adult learners to study a wide range of courses (compulsory, optional, printed or web based). It also provides students with support by email or phone. It uses a variety of technologies to assist students including: audio teleconference, recording of classes, and corresponding with an instructor between classes by email or phone. The courses are only available to students attending standard school or an adult learning center. While being delivered through the internet, some courses are taught by a teacher who may be off-site. Assignments are submitted online by students to teachers, and a final examination is written on site.

Synchronous technology is a mode of online delivery where all participants are *present* at the same time, requiring a timetable to be organized. Web Conferencing is an example of synchronous technology. Others include video-conferencing, web based VoIP, telephone, and web conferencing, online chat sessions, or virtual classrooms/meetings. Virtual classrooms and meetings can often use a mix of communication technologies.

Asynchronous technology is a mode of online delivery where participants access course materials on their own schedule. Students are not required to be together at the same time. Message board forums, e-mail, audio cassettes, printed materials, voice mail, fax, DVDs, blogs, wikis, and recorded videos are examples of asynchronous technology.

This system may be an effective alternative for people who want to study but cannot attend the classical type of lessons. The reasons that hinder their presence in the traditional classroom are diverse: distance, family problems, current job, daily schedule, personal rhythm of learning (either too slow or too fast), boredom in a numerous class with students of various levels, an illness or a difficult temper. The advantages are: wide access (it can reach underserved populations of students unable to benefit from the educational services they desire, because of the distance), new market opportunities (supports lifelong learning, providing access to learners of all ages), adaptability to new technology and environments (educational institutions may adopt distance education as a means to adjust to the rapid changes in the technology in use today).

E-activities are adaptive and collaborative, having, therefore, increased didactic value. They provide student-centered accelerated learning material, which promotes self-paced accelerated learning in its turn. It can be used to reinforce what has been learned in the classroom, but it can also be used as a remedy, in order to help learners with limited language proficiency.

2.5 Particular questionnaire design issues for probing English language e-learning for engineering students and graduates

- Clear goals were expressed in concise sentences, and the questionnaire directly addressed them.
- One of the best ways to clarify study goals was to decide on how to use the information.
- Only questions directly addressing the study goals were included, avoiding the temptation of asking questions just because it would have been 'interesting to know', as some students suggested.
- Long questionnaires get less response than short questionnaires, so it was kept as short as possible, organizing questions on themes. Response rate is the most important indicator on how much confidence can be placed in the results, so everything possible was done for maximizing the response rate.
- For simplification reasons, certain questions were eliminated. The remaining ones referred to the decision-making process.
- One important way to assure a successful survey was to include relevant decision-makers (employers) in the questionnaire design process. Their suggestions improved it, subsequently generating more confidence in the results.
- A plan for doing the statistical analysis was formulated during the design stage of the project, allowing preparation for handling missing data.
- A well-written cover letter was provided to persuade the respondent to complete the survey.
- A short and meaningful title was given, because a questionnaire with a title is generally perceived to be more credible than one without.
- Clear and concise instructions on how to complete the questionnaire were included. The language used

was easy to understand, with short sentences and basic vocabulary.

- A few non-threatening and interesting items were placed at the beginning, knowing that, if the first items are too intrusive or boring, there is little chance for the person to complete the questionnaire. People generally look at the first few questions before deciding whether or not to continue.
- The language used was simple and direct, with clear questions, to the point, avoiding uncommon words or long phrases. This made the questionnaire appear easy to fill in and reduced misunderstandings.
- Adequate space was left for respondents to make comments, also counting on the impression that white space makes the questionnaire seem simple, which increases the response rate.
- Most important items were placed in the first half of the questionnaire, as respondents often send back partially completed questionnaires.
- Variety was provided in the type of items used, and in the format, to prevent respondents from falling into answering routines. At the same time, it was important to group items into coherent categories, flowing smoothly from one to the next.
- It was made as convenient and as motivating as possible, under the circumstances.
- The final test of the questionnaire, before implementation, was to try it on representatives of the target audience. While certain respondents were answering, they were instructed to ask for clarification whenever necessary, on any item. It helped rephrasing, rooting out ambiguity and regrouping questions.

2.6 Linguistic aspects in question formulation

The qualities of a relevant and well asked question in questionnaires are as follows:

1. Evokes the truth in non-threatening ways. When people are concerned with the consequences of answering a question in a particular manner, there is a good chance for the answer not to be truthful. Anonymous questionnaires that exclude identifying data are more likely to produce honest answers than those pointing to the respondent. Confidentiality policy should be clearly stated if the questionnaire contains sensitive items.

2. Leads to specific answers on 1 level only. As the purpose of a survey is to find out information, questions that ask for responses on more than one dimension cannot provide the necessary data. Easily quantifiable questions need just 1 bit of information.

3. Can accommodate all possible answers. Multiple choice items are the most popular type of survey questions as they are the clearest for people to answer and the easiest to analyze. Asking a question that does not accommodate all possible responses can confuse and frustrate the respondent.

4. Has mutually exclusive options. Effective questions leave no ambiguity in respondents' minds, having only one correct / appropriate choice.

5. Produces variability of responses. If a question produces invariable answers, no relevant and discriminating information is found, therefore it will be impossible to perform any statistical analysis on the item. Questions should be designed so as to be sensitive to differences between respondents.

6. Comfortably follows previous questions. Transitions between questions should be logical and smooth. Grouping similar questions will make the questionnaire easier to complete, and the respondent will volunteer more information, producing high response rates on the whole.

7. Does not assume a certain state of affairs. Among the most subtle mistakes in questionnaire design are the items which make unwarranted assumptions. It is vital to understand that responses are rough estimates, that there is strong likelihood of error, and that all subjects must be able to respond.

8. Does not imply a desired answer prompted by question wording. Surveys strive for objectivity; therefore, the respondent must not be lead into giving the answer one would like to receive. Leading questions are usually easily spotted because they use negative phraseology.

9. Does not use emotionally loaded or vaguely defined words. This is one of the areas overlooked by both beginners and experienced researchers. Quantifying adjectives (e.g., most, least, majority) are frequently used in questions, but they mean different things to different people.

10. Does not use unfamiliar words, complex phrases, compound sentences, or excessive/unknown abbreviations. The questions should be adapted to the audience and formulated into short sentences.

11. Does not depend on answers to previous questions. While branching can be used as an effective probing technique in telephone and face-to-face interviews, it should not be used in written questionnaires because it confuses the respondents.

12. Does not require the respondent to order or rank series of more than five items. Ranking by importance should be avoided as it is too subjective. Increasing difficulty emerges as the number of items rises, making the answers less reliable. It is also problematic to ask respondents to assign percentages to a series of items. In order to successfully complete this task, they must mentally continue to re-adjust answers until they total one hundred percent. Limiting the number to five will make it feasible.

2.7 Guidelines for writing questions and answer categories in the foreign language

There are no all-purpose rules that, if followed, will automatically result in a well-written questionnaire. There are, however, some basic principles that, when violated, usually result in respondent confusion, misunderstanding, low rate response, lack of comprehension, or bias. Here are some guidelines which helped with the effective organization of both the survey and the minds of the people involved in this research:

- Formal speech with simple, predictable lexis

A first rule concerns the vocabulary used in writing questions and answer categories and implies using clear and accessible words, avoiding acronyms, abbreviations, jargon, technical terms, and abstract or too general words.

- Rare or technical terms must be explained.

For example, a question concerning different text styles should be accompanied by a definition of each type: narrative (texts that tell a story or give the order in which things happen), expository (texts that provide a factual description of things or people or explain how things work or why things happen), documents (tables, charts, diagrams, lists, maps).

- Always spell out acronyms/abbreviations, never assuming that the respondent will or should know what they represent.
- Concrete examples clarify a general term. It is also recommended to avoid words that may have an ambiguous meaning. For example, education systems refer to lesson length as an hour even if the lesson is only fifty minutes long
- Short questions: recommended length is 25 words or less. Avoiding lengthy questions is closely related to keeping the vocabulary simple. If a longer complex meaning has to be implemented, then it should be conveyed in several shorter sentences.
- Avoid single questions that ask for 2 things simultaneously and therefore require 2 answers. In such instances, respondents do not know how to proceed if they want to say *yes* to one part of the question but *no* to the other.
- Eliminate hypothetical questions. Evidence has shown them to be useless in predicting behavior. People are generally poor predictors of their own conduct because of changing circumstances and situational variables. Investigators collect more valid data if they ask respondents about their past behavior and present circumstances, attitudes, and opinions.
- Little pressure on subjects' memory. It is risky to ask respondents to recall past behavior over long retrospective periods, especially when recurrent events or behaviors are concerned. They cannot answer reliably because the interval is too long to remember details
- Avoid double negatives in the question or in the answer category, as they create difficulties to the respondent. A negative statement followed by agree/ disagree is problematic to answer for those who are in favor, i.e. those who do not agree with the initial statement. Such problems are usually solved by positive formulations.
- Eliminate overlapping response categories. Answer categories should be mutually exclusive. It should not be possible to agree with or choose more than one category – unless the instructions explicitly allow the respondent to check more than one alternative. Categories become mutually exclusive by removing qualifiers (e.g. *usually, sometimes*).
- Beware of 'leading' questions. It is phrased in such a way that the respondent thinks a particular answer is expected.

2.8 Question wording

The wording of a question is extremely important. Researchers strive for objectivity in surveys and, therefore, must be careful not to lead the respondent into giving a desired answer. Unfortunately, the effects of question wording are one of the least understood areas of questionnaire research.

Many investigators have confirmed that slight changes in the way questions are worded can have a significant impact on how people respond. Several authors have reported that minor changes in question wording can produce more than 25% difference in people's opinions.

Several investigators have looked at the effects of modifying adjectives and adverbs. Words like *usually*, *often*, *sometimes*, *occasionally*, *seldom*, and *rarely* are commonly used in questionnaires, although it is clear that they do not mean the same thing to all people. Some adjectives have high variability and others have low variability. The following adjectives have highly variable meanings and should be avoided in surveys: *a clear mandate, most, numerous, a substantial majority, a minority of, a large proportion of, a significant number of, many, a considerable number of*, and *several*. Other adjectives produce less variability and generally have more shared meaning. These are: *lots, almost all, virtually all, nearly all, a majority of, a consensus of, a small number of, not very many of, almost none, hardly any, a couple,* and *a few*.

Just as teachers modify the way they speak to students learning a foreign language, so do scientists modify their speech when communicating

with research subjects, be they natives or foreigners, for fear they might be only partially understood, or fully misunderstood. These alterations are obvious in both input and interaction.

The informal, sometimes ungrammatical response is socially marked. It often implies lack of respect on one part and can be resented by the interlocutor. It is characterized by the deletion of certain grammatical features such as modals and articles, the use of the base form of the verb instead of the tense, and the use of special constructions such as 'no + verb'. It should be immediately apparent that these features are the same as those found in foreigners' interlanguages. However, there is no convincing evidence that such errors may derive from the language subjects are exposed to.

Various types of modifications of baseline talk can be identified. First, grammatical foreigner talk is delivered at a slower pace. Second, the input is simplified (the use of shorter sentences, avoidance of subordinate clauses and the omission of complex grammatical forms). Third, such a talk is sometimes regularized (this involves the use of forms that are in some sense *regular* or *basic*: the use of full rather than contracted forms, for instance). Fourth, it sometimes consists of elaborated language use. This involves the lengthening of phrases and sentences in order to make the meaning clear.

Input modifications of this kind originate in the individual subject answering the questionnaire. The foreign engineer seems to know intuitively how to alter communication to get messages across. Still, there are times when comprehension does not occur. When this happens, respondents have a choice: they can pretend they have understood (research shows that they sometimes do this) and, alternatively, they can signal that they have not understood and try to manage accordingly. This results in modifications as the participants engage in negotiations of meaning. Subsequently, sample subjects learn how to control a concept without others' assistance.

2.9 Types of questions in foreign language questionnaires on engineering topics

In self-administered surveys, it is useful to provide instructions on the format of the response that is required so as to minimize opportunities for the subjects to answer in very different dimensions.

As a general rule, long questionnaires get less response than short questionnaires. However, research has shown that questionnaire length does not necessarily affect responses. Question content is more important than length. A subject is more likely to respond if involved and interested in the topic.

Questions should be meaningful and interesting to the respondent. In general, there are two types of questions one will ask, open format or closed format, the latter having a variant, called the contingency question.

2.9.1 Open format questions

Open format questions are those that ask for unprompted opinions. In other words, there are no predetermined sets of responses, and the participant is free to answer whatever and however he chooses.

They prove useful in soliciting subjective data or when the range of answers is not tightly defined. An obvious advantage is the wide variety of responses which more truly reflect respondents' opinions, increasing the likelihood of providing the researcher with unexpected, insightful suggestions, as it is impossible to predict the full range of views. It is common for a questionnaire to end with and open format question asking respondents for their ideas on changes or improvements.

Open-ended or free-response questions are not followed by any choices and the respondent must answer by supplying a response, usually by entering a number, a word, or a short text. Answers are recorded in full, either by the interviewer or, in the case of self-administered surveys, by the subjects who record their own responses entirely. With open-ended questions there is always the possibility that answers may come in very different forms, which lead to data that cannot be systematically coded for analysis. If the survey is administered by an interviewer, appropriate probing helps clarify such issues. In the case of a self-administered survey, guidance by writing specific instructions on how to answer the question can often minimize the number of responses with very different dimensions.

Care should be taken in writing open-ended questions so as to avoid formats that elicit a dichotomous yes/no or agree/disagree response. In addition, the wording of questions should seek to reduce the possibility of eliciting responses that are aligned along different dimensions and therefore cannot be systematically coded.

A good case for using open-ended questions is when the aim is to have the respondents reply spontaneously, or when the investigator is pilot testing the first version of the questionnaire, or when the investigator collects evidence on the parameters of an issue aiming at formulating a multiple choice or closed version of a question. Generally, open-ended questions produce useful information in an interviewer administered survey, provided that they are alert and trained to probe ambiguous responses.

Main advantages of open-ended questions:

- allow respondents to spontaneously express their ideas, in their own language.
- are less likely to suggest or guide the answer, as compared to closed questions, because they are free from any format effects.
- can add new information when there is very little existing input data available about a topic.

Disadvantages of open-ended questions:

- difficult to answer, and more difficult to analyze.
- require effort and time from the respondent.
- require the development of a system of coded categories by which to classify the responses.
- require subjects to have certain writing abilities.
- respondents' handwriting can be illegible.
- require individual reading.
- inexistent ways to automatically tabulate or perform statistical analysis on them.
- consume time and money, and are not practical for lower budget or time sensitive evaluations.
- open to readers' influence, because no two people will interpret an answer in precisely the same way. This conflict can be eliminated by using a single reader, but many responses make this impossible.
- require more thought and time on the part of the respondent, tiring/boring him and altering the result.

2.9.2 Closed format questions

There is no clear consensus on the number of options that should be given in a closed format question. Obviously, there must be sufficient choices to fully cover the range of answers, but not so many that the distinction between them becomes blurred. Usually this translates into five to ten possible answers per question.

For questions that measure a single variable or opinion, such as ease of use or liability, over a complete range (easy to difficult, like to dislike), conventional wisdom says that there should be an odd number of alternatives. This allows a neutral or no opinion response. Other schools of thought state that an even number of choices is best because it forces the respondent to get off the fence. This may induce inaccuracies, for often the respondent may actually have no opinion. However, it is equally arguable that the neutral answer is overused, mainly by bored sample subjects. For larger questionnaires that test opinions on a very large number of items, it may be best to use an even number of choices to prevent a bulk of no-thought neutral answers.

Closed (or multiple choice) questions ask the respondent to choose, among a possible set of answers, the response that most closely represents his/her viewpoint. The subject is usually asked to tick or circle the chosen answer. Questions of this kind may offer simple alternatives such as *yes* or *no*. They may also require a choice among several answer categories, or the use of a frequency scale, an importance scale, or an agreement scale. The answer format may range from simply stating yes/no, to selecting an approve/disapprove alternative, or to asking the respondent to choose one alternative from three or more options. Format impact or response bias could be reduced by changing the sequence of response categories and values. For example, if responses to an item range from 1 to 5, going from negative to positive, then a number of items in the questionnaire can be designed to have 1 as the most positive alternative and 5 as the most negative. This is a particularly important technique for the design of attitude scales. Some closed questions may have a dichotomous response format, which means that only two mutually exclusive responses are provided. However, this format should not be overused in a survey because it elicits much less information than multiple choice formats. Multiple category response formats provide more specific and more useful information than the dichotomous one.

Main advantages of closed questions:

- save time and money.
- easy and quick to answer
- response categories are easy to code
- permit the inclusion of more variables in a research study, as the format enables the respondent to answer more questions in the same time required to answer fewer open-ended questions.
- the respondent is restricted to a finite (therefore more manageable) set of responses.
- allow the researcher to filter out useless or extreme answers that might occur in an open format question.
- by restricting the answer set, it is easy to calculate percentages and other statistical data over the whole group or in any subgroup. Modern scanners and computers make it possible to administer, tabulate, and perform preliminary analysis in a matter of days.

Main disadvantages with closed questions:

- introduce bias, either by forcing the respondent to choose between given alternatives or by offering options that otherwise would not have come to mind.
- exclude creativity and development of ideas.
- forbid the respondent to qualify the chosen answer or express a more complex or subtle meaning.
- may facilitate bias, when respondents tend to tick systematically either the first or the last category, or select the most socially desirable alternative, or respond to all the items in a list in the same way.
- require writing skills because response categories need to be appropriate, and mutually exclusive.

2.9.3 Contingency questions

A contingency question is a special case of a closed-ended question because it applies only to a subgroup of respondents. The relevance of the issue for a subgroup is set by asking a filter question. It directs the subgroup to answer a relevant set of specialized items and instructs other subjects to skip to a later section of the questionnaire.

The advantage of contingency questions is that detailed data may be obtained from a specific population subgroup. Some questions may apply only to females and not to males; others may apply only to people in school, and not to the ones employed. Essential for good contingency questions are clear and specific instructions to respondents.

The formats for filter and contingency questions may vary. One option is to write directions next to the response category of the filter question. Alternatively, the contingency question is placed at the end of the questionnaire, set apart from ordinary questions that are to be answered by everybody.

2.10 The Order of the Questions

Items on a questionnaire should be grouped into logically coherent sections. Grouping questions that are similar will make the ensemble easier to complete, and the subject will feel comfortable. Questions using the same response formats, or those that cover a specific topic should appear together.

Each question should flow logically from the previous one. Writing a questionnaire is similar to any writing task, and transition between questions should be smooth. Questionnaires that jump from one unrelated topic to another seem disjointed and are not likely to produce high response rates.

Most investigators have found that the order in which questions are presented can affect the way people respond. Recent research has reported that questions in the latter half of a questionnaire were more likely to be omitted, and contained fewer extreme responses. Some analysts have suggested that general questions must be presented before specific ones, for avoiding response contamination.

It is not clear whether or not question-order affects response. Certain researchers have reported that it does not affect responses, while others have reported that it does. Question-order impact is seen in interviews, generally, but not in written surveys.

2.11 Guidelines for item placement

The placement of items in a questionnaire requires careful consideration. Good item placement can increase respondents' motivation – which in turn results in more valid data. Here are some general guidelines for item placement:

1. Non-sensitive demographic questions should be placed at the beginning of the questionnaire because they are easy to answer, non-threatening, and tend to put the respondent at ease.
2. Items of major interest to the research should be placed next, since there is greater probability of the respondent answering or completing the first section of the questionnaire.
3. Sensitive items covering controversial topics must be placed last so that potential resentment provoked by them will not influence other responses.
4. Items on the same topic must be grouped together. However, care should also be taken to prevent one item influencing responses to later items.
5. Items with similar response formats should be grouped together when several different response formats are being used within a questionnaire.
6. Section titles should be used to help the respondent focus on the area of interest.

2.12 Checklist for reviewing questionnaires

The following list of questions provides a framework for reviewing each item that is to be included in a questionnaire.
1. Will the item provide data in the format required by the research questions or the hypotheses?
2. Is the item unbiased?
3. Will the item generate data at the measurement level required for analysis?
4. Is there a strong likelihood that most respondents will answer the item truthfully?
5. Do most subjects possess sufficient knowledge to answer the items?
6. Are most respondents willing to answer the item, or is it too threatening or too sensitive?
7. Does the item lead subjects to a specific answer?
8. Is the language used in the questionnaire clear and simple, so that all subjects are able to understand it?

2 Problem Formulation: prospecting the Romanian learning and labor market to identify ODL opportunities. Questionnaire during 1999-2009

2.1 Preliminaries

1. What age group do you belong to?

a) 20 – 25	d) 35 – 40
b) 25 – 30	e) 40 –45
c) 30 – 35	f) 45 – 50

2. What other foreign languages can you speak?

3. If any, what languages do you speak or have you spoken simultaneously?
4. If any, what languages have you studied at the same time?
5. At the moment are you studying two foreign languages simultaneously? Which ones?
6. Are you interested in the English language materials on the market? Mark your options.

- dictionaries
- grammar courses
- literature books
- culture and civilisation lectures
- translations
- bilingual volumes
- exercises and grammar compendium
- conversation guides

7. Are you connected to an English speaking environment?
8. How do you face the challenges of an English speaking environment?
9. Are you interested only in acquiring the foreign language skills, or do you want to find out more about that culture, about the business opportunities and about that distinctive lifestyle?
10. To what purpose are you learning English? Tick your options:

- to keep up with new developments in your profession
- to pass a standard test
- for a scholarship or a specialisation course
- for professional re-conversion
- for a part time job (tourist guide, occasional translator, etc.)
- for your general cultural background
- for a certificate that will facilitate a better job or a promotion
- to help a family member (your child, for example)
- to better handle business and official documents
- to enjoy entertainment opportunities (music, movies, English language TV channels such as CNN, Discovery, Animal Planet, TCM, Euro News)
- others (please specify)

11. What are the near future targets you plan to achieve by means of ODL?
12. What profession were you trained for?
13. What used to be your previous field of activity?
14. What is the professional area you intend to re-direct to?

2.2 Preference for e-learning English

15. What are the reasons why you do not attend traditional courses?
16. How do you rate your own level of knowledge in English (beginner, intermediate, advanced?)
17. How long can you concentrate with good results on only one activity?
18. How do you organise your learning effort?
19. How much time do you spend on revisions?
20. How much time would you allot to traditional learning?
21. How much time do you intend to spend on ODL in the context of your present duties?
22. In view of your personal experience, what is your opinion about the traditional lesson structure?
23. What aspects hindered your learning in the traditional teaching framework? Tick:

- the materials were never available in time
- the layout and the design of the materials were not appropriate for your level
- the materials did not provide balanced activities to stimulate your skills
- there was less communicative output to be derived from the materials
- the new language was not introduced in motivating and realistic contexts
- the course supports did not encourage meaningful language practice
- the subject and the content of the materials were not relevant for your purposes
- the materials created harmful stereotypes
- the content of the materials was not
  - realistic
  - interesting
  - varied
  - challenging
- the materials did not reflect the multicultural nature of modern society
- the materials did not point to clear objectives
- the materials relied too much on translations

24. What improvements would you make in the traditional lesson structure?
25. What aspects do you find useful within the traditional teaching framework?
26. What were the circumstances in which the use of auxiliary didactic materials impressed you and facilitated your learning?
27. What is your opinion about homework (opportunity of language practice, utility, form)?
28. Do you think that the present usual methods of evaluation are efficient?

29. What improvements would you suggest in the evaluation system?
30. Are you satisfied with the degree of interaction between students and teachers within the traditional learning framework?
31. Do you think you need more co-operation and monitoring from

- your teacher
- other teachers
- other students?

32. How do feed-back and learning control affect you?
33. How often do you need feed-back and evaluation for optimum learning?
34. Does feed-back motivate and stimulate you more in you learning?
35. Which are the personal aptitudes that facilitate your study within the ODL framework?
36. Have you used such aptitudes in traditional learning as well?
37. How does the computer change your perspective regarding your own work and achievements?
38. How does computer-based learning change your attitude towards

- your teachers
- your peers?

2.3 Material support

39. In your opinion, what material support is required in ODL?
40. Do you think that the lack of an adequate material support would prevent you from participating in ODL?
41. Can you afford the materials?
42. Do you have free access to a computer?
43. Do you communicate by e-mail?
44. Do you have your own e-mail address?
45. Do you have ready access to the Internet?
46. How did the computer influence your learning?

2.4 Personal conclusions

47. Which are the reasons why you prefer ODL to traditional learning?
48. Which are your expectations regarding ODL?
49. Which other questions would you suggest?

2.5 Accessing information on ODL

50. How and where from did you learn about ODL?
51. What aspects of ODL would you want to know better?
52. Which are, in your opinion, the modalities of making ODL better known to the public?

3. Problem Solution. Interpretation of data from the time interval 1999-2009

3.1 Landmarks in questionnaire analysis

1. **Clarity:** This is probably the greatest source of mistakes in questionnaires. Questions must be clear, succinct, and unambiguous. The goal is to eliminate the chance that the question might mean different things to different people. To this end, it is best to phrase questions empirically if possible and to avoid the use of unnecessary adjectives. There are other more subtle aspects to consider such as language and culture. Avoid using colloquial or ethnic expressions that might not be equally familiar to all participants. Technical terms that assume a certain background should also be avoided.

2. **Leading Questions:** A leading question is one that forces or implies a certain type of answer. A closed format question must supply answers that not only cover the whole range of responses, but that are also equally distributed throughout the range. All answers should be equally likely.

3. **Phrasing:** Most English adjectives, verbs, and nouns have either a positive or negative connotation. Two words may have equivalent meaning, yet one may be a compliment and the other an insult. The superlative question is a common wrong practice. One method to counter the positive/negative lead is to be aware of different ways to word questions and provide a mix in the questionnaire. If the participant pool is very large, several versions may be prepared and distributed, to cancel out these effects.

4. **Embarrassing Questions:** Embarrassing issues dealing with personal or private matters should be avoided. Collected data are only as good as the trust and care respondents give. If they feel uncomfortable, trust will be lost.

5. **Hypothetical Questions** They are based, at best, on conjecture and, at worst, on fantasy, forcing the respondent to give thought to something he may have never considered. This does not produce clear and consistent data representing real opinions; therefore they are to be avoided.

6. **Prestige Bias:** Prestige bias is the tendency for respondents to answer in a way that might make them feel better. People may not lie directly, but may try to put a better light on themselves. For

example, it is not uncommon for people to respond to a political opinion poll by saying the opposite of what they will vote. Data from other questions, such as those that ask how long it takes to learn an interface, must be viewed with a little skepticism. People tend to say they are faster learners than they really are. There is little that can be done to prevent prestige bias. Sometimes there just is no way to phrase a question so that all the answers are noble. The best means to deal with prestige bias is to make the questionnaire as private as possible. Telephone interviews are better than person-to-person ones, and written questionnaires mailed to participants are even better still. The farther away the critical eye of the researcher is, the more honest the answers.

3.2 Anonymity and Confidentiality

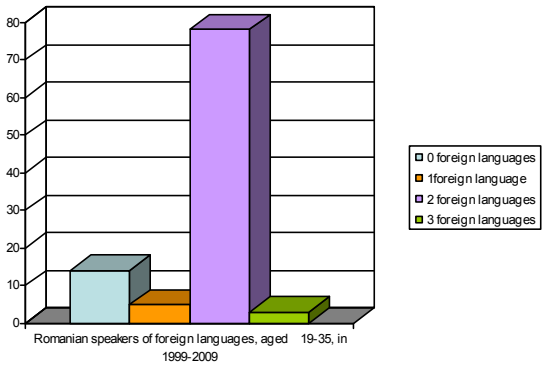
An anonymous study is one in which nobody (not even the researcher) can identify who provided the information. It is difficult to conduct an anonymous questionnaire because there is the need to follow-up on non-responders. Still, it is possible to guarantee confidentiality, when those conducting the study promise not to reveal the information.

Some studies have shown that response rates are affected by the anonymity/confidentiality policy of a study. Others have reported that responses became more distorted when subjects felt threatened that their identities would become known. Others have found that anonymity and confidentiality issues do not affect response rates or responses.

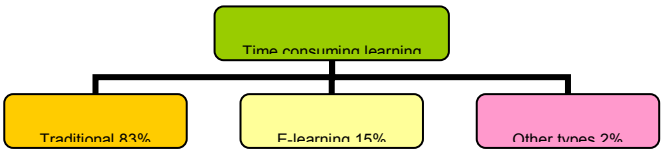
3.3 Data interpretation

The questionnaire presented above required general answers, encompassing the learning process, and no deeply personal details were provided by the interviewees.

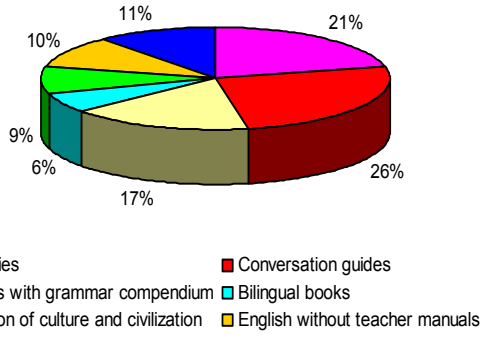
- 78 % could speak two foreign languages (conversational level at least)



- 7 % were studying two foreign languages simultaneously at that moment; one option was English and the other was either French or German
- 85 % considered the computer a familiar working tool
- 83 % rated traditional learning as more time consuming

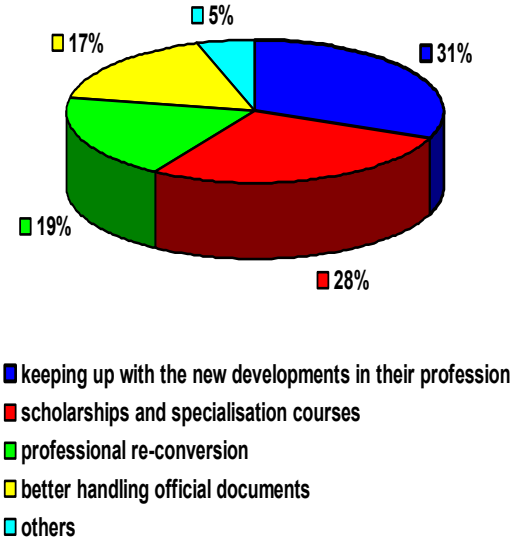


- The most popular English language materials on the market were the dictionaries, the conversation guides and the exercises with grammar compendium (64 %). The percentage is relevant for the old fashioned approach to learning that most mature learners still prefer.



- Only 3 % had to currently face an English speaking environment
- 95 % had a clearly developed personal learning style and a substantial cultural background.
- 70 % did not need close monitoring, frequent control or much feedback
- 30 % needed English for keeping up with the new developments in their profession
- 28 % needed English for scholarships and specialisation courses
- 20 % needed English for professional re-conversion
- 17 % needed English for better handling official documents

Here follows a representation of these categories:

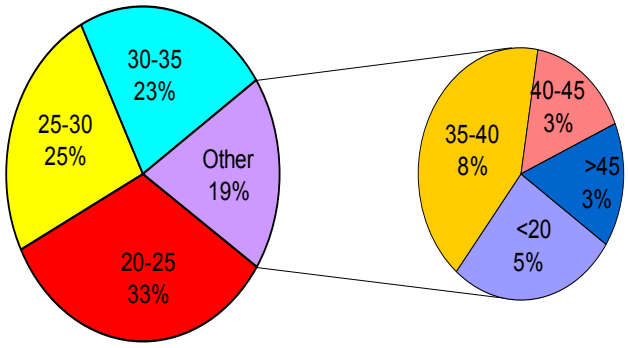


This field research has demonstrated that there are many learners who would choose web-based learning for obtaining a university degree, but there are others, even more numerous, who would choose this system for acquiring a second degree or specialization that might help them change their career or their profession altogether.

Other potential students need to improve their level of knowledge in their present field of work, or they want to get a different part time job, therefore they only need a certificate, and to this purpose they select ODL as less time consuming, especially because they already have the necessary background of knowledge to successfully pursue the course. Whatever the reasons and circumstances, one conclusion is clear: the age group that is most interested in ODL ranges from 20 to 35.

- The interviewees were mostly students, didactic personnel and young professionals. 80 % belonged to 20 → 35 age group

Here is the age distribution:



In multimedia programs, listening is combined with seeing, similar to the real world. Students also control the pace and the path of the interaction, which is in the foreground, although many programs also provide links to explanations simultaneously. More recent research has favored a learner-centered explorative approach, where students are encouraged to try different possible solutions to a problem.

The reasons for using computer-assisted language learning include: experiential learning, motivation, enhancement of student achievement, authentic study materials, greater interaction, individualization, independence from a single source of information, and global understanding.

The barriers inhibiting the practice of computer-assisted language learning can be classified in the following categories: financial barriers, availability of computer hardware and software, technical and theoretical knowledge, and acceptance of the technology.

A number of studies have been done concerning how e-learning affects the development of language learners' four skills (listening, speaking, reading and writing). Most students report significant gains in reading and listening, and most programs are geared toward these receptive skills because of the current state of computer technology.

However, most reading and listening software is based on drills. Gains in writing skills have not been as impressive, as computers cannot assess this well. Nevertheless, using existing technology, even with its limitations, the development of speaking abilities has gained much attention.

There has been some success, in particular in the computer-mediated communication; it helped speaking skills connected with the communicative competence (engaging in meaningful dialogues in the target language) and also provided controlled interactive speaking practice outside the classroom.

Using chat has been shown to help students routinize certain frequently used expressions and promote the development of automatic structures which help develop speaking skills. This is true even if chat is purely textual.

The use of videoconferencing gives not only immediacy when communicating with a real person but also visual cues, such as facial expressions, thus making communication more authentic.

Still, when it comes to using the computer not as a medium of communication (with other people) but as something to interact with verbally in a direct manner, the computer technology limitations nowadays are at their clearest.

3.4 When to use a questionnaire?

There is no all encompassing rule for when to use a questionnaire. The choice will be made based on a variety of factors including the type of information to be gathered and the available resources for the experiment. A questionnaire should be considered in the following circumstances.

- **When resources and money are limited.** A Questionnaire can be quite inexpensive to administer. Although preparation may be costly, any data collection scheme will have similar preparation expenses. The administration cost per person can be as low as postage and a few photocopies. Time is also an important resource that questionnaires can maximize. If a questionnaire is self-administered, (e-mail questionnaires), potentially thousands of people could respond in a few days. It would be otherwise impossible to get a similar number of tests completed in the same short time.
- **When it is necessary to protect participants' privacy.** Questionnaires are easy to administer confidentially. Often confidentiality is necessary to ensure that subjects will respond honestly if at all.
- **When corroborating other findings.** In studies that have resources to pursue other data collection strategies, questionnaires can be useful confirmation tools. More costly schemes may turn up interesting trends, but occasionally there will not be resources to run these other tests on large enough participant groups to make the results statistically significant. Therefore, a follow-up large scale questionnaire may be necessary to corroborate these earlier results.

4 Conclusion

In many educational models, the writing community and the communication channels relate with E-learning and M-learning communities.

They both provide a general overview of the basic learning models and the activities required for the participants to join the learning sessions across the virtual classroom or even across standard classrooms enabled by technology.

Many activities, essential for the learners in these environments, require frequent discussion sessions in the form of virtual classrooms and/or blog meetings.

This study has shed more light on professors' roles in web-based foreign language teaching in engineering.

Although the integration of compter assisted language learning into a foreign language program can lead to great anxiety among language teachers, researchers consistently claim it changes, sometimes radically, the role of the educator, but does not eliminate the need for a teacher altogether.

Instead of handing down knowledge to students and being the center of students' attention, professors become guides as they construct the activities students are to do, and help them as they complete the assigned tasks.

In other words, instead of being directly involved in engineering students' construction of the foreign language, the professor interacts with students primarily as a facilitator in using the target language (grammar, vocabulary, formal/informal styles) that arise when interacting with the computer and/or other people.

Elimination of a strong teacher presence has been shown to lead to larger quantity and better quality of communication such as increased fluency, more use of complex sentences and more sharing of students' ideas and personal outlooks on life. However, teacher presence is still very important to students when doing e-activities.

Professors should be familiar enough with the resources to be used in order to anticipate technical problems and limitations.

Students need the reassuring and motivating presence of a teacher in e-environments, not only during the initial learning curve, but also in review sessions for reinforcing what was learned.

Encouraging students to participate and offering praise are regarded as highly important by students. Most of them report preferring to do work in a lab with a teacher's/tutor's help, rather than do it completely on their own.

This approach was also relevant for the shift in students' roles in in web-based foreign language teaching in engineering.

Students, too, need to adjust their expectations and their participation in class. Rather than passively absorbing information, learners must negotiate meaning and assimilate new information through interaction and collaboration with someone other than the teacher, be that person a peer or someone outside of the classroom entirely.

Students must also learn to interpret new information and experiences on their own terms. However, as the use of technology redistributes teachers' and students' attention, less-able students can become more active participants in class because the interaction is not limited to the one directed by the teacher.

Moreover, shy students can feel free in their own student-centered environment. This will raise self-esteem and improve knowledge.

Emerging technology is becoming widely used in universities and institutions around the globe. With the recent trend in technological progress, distance learning has proved to be highly valued for its potential in providing individualized attention and communication with students worldwide.

References:

1. Babbie, E., *The Practice of Social Research*, Free Press, 1992
2. Bales, F.R., *Interaction Process Analysis*, M.I.T. Press, 1991
3. Benavent Climent, A., *Earthquake engineering education through distance learning using advanced synchronous and asynchronous technologies*, WSEAS Transactions on Advances in Engineering Education, vol. 6, 2009
4. Berthier, N., Berthier, F., *Le Sondage d'oppinnion*, Librairies Techniques, 1998
5. Cismas, S., *Open distance learning: pre-ODL teacher/student questionnaire*, Proceedings of ATEE2000, Symposium on Advanced Topics on Electrical Engineering, p. 59-65, The Polytechnic University of Bucharest, 2000
6. Converse, J.M., Presser, S., *Survey Questions, Handcrafting the Standardized Questionnaire*, SAGE Publications, 1996
7. Frey, J.H., Oishi, S.M., *How to Conduct Interview by Telephone and in Person*, SAGE Publications, 1995
8. Gordon, R.L., *Interviewing: Strategy, Techniques and Tactics*, Homewood, Dorsey, 1999
9. Hammersley, M., *What is Social Research?*, The Open University Oxford, 1993
10. Hammersley, M., *Social Research, Psilosophy, Politics and Practice*, SAGE Publications, 1993
11. Javeau, C., *L'Enquête par questionnaire*, Editions de l'Université Libre de Bruxelles, 2001
12. Kadavova, M., *Identifying the break-even point in distance courses*, WSEAS Transactions on Advances in Engineering Education, vol. 5, 2008
13. Marin-Garcia, J., Lloret, J., *Improving teamwork with university engineering students. The effect of an assessment method*, WSEAS Transactions on Advances in Engineering Education, vol. 5, 2008
14. Patton, M.Q., *Quantitative Evaluations: Methods*, SAGE Publications, 2006
15. Summers, J., *Attitude Measurement*, Rand McNally & Company, 2008