

**CALL-BASED LEARNING-STYLES
QUESTIONNAIRES: A FIRST STEP TOWARDS
ENHANCING AND ENRICHING LANGUAGE
LEARNING STYLES**

Mónica Stella CÁRDENAS CLAROS
Iowa State University (Etats-Unis)

Résumé

Ce travail présente les résultats d'une analyse d'un questionnaire sur les styles d'apprentissage, spécialement construit pour mesurer la dépendance de champ / l'indépendance de champ, la réflexivité / l'impulsivité et les préférences auditives / visuelles comme aspects pertinents pour l'ELAO. Le questionnaire a été validé par 38 étudiants, inscrits au cours de Langue Allemande et 104, à l'Université Simon Fraser. Les théories fondatrices pour la conception du questionnaire et l'analyse statistique appliquée à celui-ci sont discutées. L'usage potentiel du questionnaire dans la recherche en L2 est envisagée. L'analyse conclut que le questionnaire pourrait être utilisé comme outil d'enseignement et de sensibilisation, mais les résultats ne devront pas être pris en compte dans la recherche en ELAO avant que la fiabilité et la validité du questionnaire ne soient améliorées.

Abstract

This paper reports the findings of an assessment of a CALL-based learning style questionnaire devised to specifically measure the learning styles of field dependence / field independence, reflection / impulsivity, and auditory / visual preferences when related to CALL. The questionnaire was validated with 38 students enrolled in German 104 at Simon Fraser University. The underlying theories for the questionnaire design and statistical analysis are discussed along with the potential use of the questionnaire in L2 research. The study concludes that the questionnaire may be used as a teaching or as consciousness-raising tool, but no attempt to use the results for CALL-based research should be made until the reliability of the questionnaire is improved.

1. Research framework: Learning styles

1.1. Overview

The terms learning styles (LS) and cognitive styles have often been used synonymously, but Keefe (1987: 5) suggests that LS is a broader term that includes cognitive, affective and psychological factors. This author defines LS as “characteristic cognitive, affective and physiological behaviors that serve as relatively stable indicators of how learners perceive and interact with, and respond to the learning environments”. This definition has led to multiple classifications of LS, in which the perceptual and cognitive dimensions are the most widely studied in the area of language learning. Oxford (1990: 37) suggests that LS provide evidence of the character of “consistent learning and behavior patterns that learners develop”. This parameter may vary across contexts, and has become one of the many issues in need of further research. In Brown’s view (1987: 87), “some people might be both highly field dependent and highly field independent as contexts vary”, while others may prefer to draw on visual or oral information depending on the task to be achieved.

Reid (1995: 4) defines LS as an “individual’s natural habitual and preferred ways of absorbing, processing and retaining new information and skills”. No matter how recent the definition is, and what terms researchers use to conceptualize it, they agree that it is a distinctive, consistent, and unique behavior which individuals develop to encode and react to learning environments. Physical, affective, and cognitive domains interact as a result and characteristics arise that make one individual different from another. How students learn, what they learn, when they learn and to some extent the kind of vocational choices they make can be explained through LS theory (J. Jamieson, 1992).

LS are not exclusive traits identified in learners. Some researchers suggest that there is a range of “mobility” in which learners can adapt to a given situation, (K. Kinsella, 1995; H. Brown, 1987). Reid (1995) suggests that learners can have more than 14 LS, but these should not be seen as mutually exclusive; rather, they are complementary traits that learners may draw on, according to the situation. It may be expected that in a grammar-based activity students identified as field-independent (FI) learners may outperform field-dependent (FD) learners, but this is not always the case, as reported by Abraham (1985). In her study she concluded that FD learners used an inductive approach, FI learners a deductive one. This suggests that good language learners may be those who are able to successfully adapt their learning strategies to a given learning situation.

1.2. Learning styles diagnosis

The benefits of LS diagnosis can be innumerable both for the classroom teacher and, more importantly, for the learner. Through LS diagnosis, the classroom teachers are exposed to a deeper and more profound view of the student, both as an individual and as a learner. This knowledge in turn can assist classroom teachers in deciding the form and presentation of materials, as well as the activities and means of assessment. Being aware of a student’s LS gives educators the most powerful tool

available to analyze, motivate and assist him or her in learning environments: “It opens the door to personalizing education” (J. Keefe, 1987: 18). LS diagnosis thus takes a step towards learner autonomy.

As for the learner, Ngeow (1999) summarizes three main benefits:

- 1) Learners who are conscious of their LS make better use of their learning opportunities.
- 2) Learners learn better when they are provided with learning opportunities that enhance and extend their learning preferences.
- 3) Learners work better with new LS when they are given guided opportunities to practice them.

These principles suggest that learning is enhanced and enriched when LS are properly addressed both before and during instruction. But how can teachers help to raise such awareness? The role of educators is to assist students in the process of self-discovery so that they become more aware of how they learn, what strategies pay off at the moment of learning, what works best for them and what does not.

The first step in raising such awareness can be achieved by administering already existing LS questionnaires (see R. Dunn et al, 1975; J. Reid, 1990; K. Kinsella, 1995) or by creating new inventories for drawing inferences about students' LS. Devising an instrument is not an easy task, so it is likely that only researchers would want to pursue such an endeavor. It requires not only careful preparation and detailed statistical analysis, but also commitment and patience because the results can only be seen over long periods of time.

1.3. Learning styles questionnaires and CALL

Although an array of instruments has been devised to measure LS (H. Witkin et al, 1971; R. Dunn et al, 1975; D. Kolb, 1976; K. Goldstein & S. Blackman, 1978; M. Tennant, 1988; J. Biggs & P. Moore, 1993; R. Riding & F. Pearson, 1994; P. Honey & A. Mumford, 1992), “researchers are still struggling to establish valid learning style theories and measurement instruments” (A. Wintergerst et al, 2001: 400). In particular, there seems to be no instrument to assess the field-dependent / field-independent (FD/FI), reflection / impulsivity (R/I), and auditory / visual preference (A/V) constructs in the context of CALL. Individual instruments do exist to measure such constructs separately, but not in the field of CALL. Measuring the three constructs with the instruments available to date would necessitate three different kinds of instruments, each with different characteristics, formats and variations in settings. This process would be not only time-consuming, but also cognitively demanding for learners.

Some SLA researchers claim that some of the instruments used to measure each of the constructs fail to do so. An instance of this can be seen in research using the GEFT or Group Embedded Figures Test (H. Witkin et al, 1971). The GEFT, a test that measures the FD/FI construct by making students find and trace a simple figure that is embedded into a more complex one, has proved not to be a reliable instrument in L2 research. Chapelle and Green (1992) note that the GEFT only

measures one of the components of the cognitive LS definition proposed by Witkin and Goodenough (1981: 51): “It is apparent that the EFT measures only the restructuring ability component”. In later work Chapelle (1995: 167) emphasizes that an instrument that measures LS should consist of items or tasks that assess “how individuals work, not how well they work”. The GEFT fails to do so, because people are scored on the number of correct responses—a high score should mean they have an independent style. However, “a low score does not necessarily imply relatively high dependence” (H. Brown, 1987: 87).

Another instrument that is well known among language teachers and which measures the perceptual LS is the Style Analysis Survey (R. Oxford, 1993). This assesses an “individual’s general approach to learning and working” (A. Wintergerst et al, 2001). Students are required to reflect on the way they learn a language by rating statements on a four-point scale. Unfortunately, the use of computers and hypermedia environments is not even mentioned among the 110 statements. It seems, given the dearth of research reported using this instrument, that it is much more frequently used as a learning awareness tool than for research.

2. The current study: Methodology

2.1. Purpose of the study and hypotheses

Given this apparent lack of a potentially useful tool, a questionnaire was devised to measure FD/FI, R/I and A/V constructs in a CALL context. Two features required particular attention:

- 1) How reliable is it? One possible source of low reliability might be the limited number of items by which each construct is assessed; the small number of respondents may be another factor.
- 2) How does each construct correlate with the others? Although the FD/FI, R/I and A/V constructs belong to an overarching construct called “LS”, they are nonetheless clearly defined. We therefore expected that no overlaps should occur between them.

2.2. Instrument

This study used a CALL-based LS questionnaire to collect data. The description below is based on the framework for task characteristics proposed by Bachman and Palmer (1996).

2.2.1. Constructs

Each construct in this CALL-based LS questionnaire (see Appendix) measures a particular component mentioned in the definition of LS provided by Keefe (1987). The R/I construct assesses the way learners react to information; the FD/FI construct assesses how they approach information (analytically or non-analytically); the A/V construct assesses the perceptual channels preferred.

- 1) Field dependence / field independence. This construct has been defined as the “analytical as opposed to the non-analytical way of experiencing the environment” (J. Keefe, 1987: 7). FD learners are portrayed as holistic, uncertain and dependent upon others, while FI learners are seen as “analytic, self-reliant and confident” (C. Chapelle & P. Green, 1992). Jonassen and Grabowski (1993) elaborate on the interpersonal competencies component of FD/FI: for them, FD learners are more affiliated-oriented, needing friendship and social contexts to express and share what they have learned. It is through social interaction that they benefit the most. FI learners, on the other hand, seem more internally directed, distant in social relationships, and have a more impersonal orientation. The variety of lesson types and the number of options (help, dictionary, hints, etc) in most language learning courseware address both FI and FD learners. Thus, FI learners are provided with the option of choosing their own path of learning, while FD learners follow a path that has been previously designed for them. A study reported by Abraham (1985) examined the effects of two types of lessons: rule-oriented and example-oriented for the acquisition of participle formation in English. It was found that FI learners performed better using a deductive approach, while FD students did better using an inductive approach. This suggests that CALL-based activities might profitably encourage each type of learner to use different strategies.
- 2) Reflection / impulsivity. This distinction is defined as the extent to which an individual waits and thinks before answering a question (J. Kagan, 1966). Reflective learners prefer to consider alternative solutions before answering, while impulsive learners answer the first thing they can think of. CALL material designers can easily manipulate this feature by programming activities in which time is adjusted to the different needs of learners, either to promote reflection in impulsive learners or to make reflective learners speed up. A research report in Spain showed that impulsive learners performed better on oral sentence construction tasks in Spanish when the program forced them to wait before responding (R. Meredith, 1978, cited in J. Jamieson & C. Chapelle, 1988).
- 3) Auditory / visual. This construct falls into the category of perceptual LS or modality preferences (J. Keefe, 1987). Visual learners learn best by seeing words and numbers printed in text form, or by using graphics and pictures, observing real life objects and events, and using maps, charts, graphs and other visual aids. Auditory learners learn best by listening to someone presenting information orally and by being allowed to discuss the topic and ask questions (R. Oxford, 1990). Multimedia tasks can be designed to address both auditory and visual learners, for example by combining video and graphics along with soundtracks.

2.2.2. Structure

The questionnaire introduced in this study measures the FD/FI, R/I and A/V constructs by incorporating the three components that Chapelle (1995: 167) suggests

should feature in any cognitive styles instrument:

- a) it should be a “test for which there are no correct or incorrect responses, but only different responses”;
- b) it “should also contain items or tasks that are interpretable with reference to the language classroom”, or in this case to CALL;
- c) and finally it “should be a positive, consciousness raising experience for learners to take and interpret”.

This model was chosen since all the characteristics are transferable and adaptable to each construct, and provide a way to achieve format consistency throughout the questionnaire. Each construct is assessed by 12 questions (36 in total), divided up into six sections:¹

- general;
- listening & speaking;
- reading;
- writing;
- vocabulary;
- grammar.

Each section is titled so that respondents have initial orientation which helps them to activate various content schemata (Z. Dornyei, 2003). Each question takes the form of a statement with two possible endings; respondents are required to choose the one that applies more to them.

2.2.3. Scoring

There are no right or wrong answers in this study. The options in each statement are designed to indicate the preference and behavior of a person with a specific LS. For example, in section 1 question 1, response A corresponds to field independence, response B to field dependence. Responses that are marked as FD, R, and A will be assigned a score of one; other responses (FI, I, V) are scored zero. The score in each category is then calculated, and the respondent’s profile marked on a continuum between the two extremes. Figure 1 provides an example where the learner’s total FD/FI score is four, tending towards the FI end of the continuum.

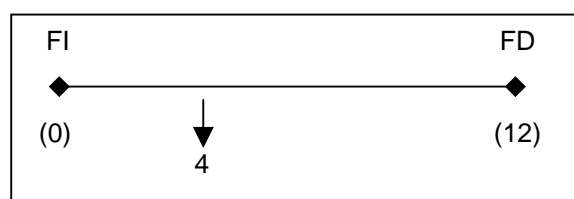


Figure 1. Field dependence / field independence continuum.

The internal consistency of the constructs was assessed with the KR-20 formula. The Spearman rank correlation coefficient was used to calculate the correlation coefficient among the three constructs.

¹ See appendix.

2.3. Method

The subjects were 38 non-native speakers of German, mostly Canadian citizens and native speakers of English and/or French. They were enrolled in intermediate and advanced German courses at Simon Fraser University in spring 2004, and working toward degrees in a wide range of subject areas across the campus.

The test was uploaded to the course web site and given as part of a homework assignment. Students were informed that results would be published two days later. Questions and answers were all presented visually. Each question was limited to a single sentence; there was no time limit for respondents to choose the best completion, (a) or (b).

In order to address the research questions, the analysis of the data consisted of two components. First, to determine the questionnaire statistical reliability, Kuder-Richarson calculations were carried out to obtain the KR20. Second, correlation analyses among the three constructs were performed. 95% confidence intervals for the Spearman correlation coefficients were calculated using bootstrapping in order to establish the statistical significance of the correlations.

3. Results and discussion

As illustrated in table 1, the R/I construct gave the highest mean, the A/V construct the lowest; standard deviations in all constructs were small. When scores are close to 12, students are placed towards the right hand end of the continuum, which reflects FD, R and A respectively; scores closer to zero are placed towards the opposite end, representing greater FI, I and V traits. Students in this study were found to favor the field dependence, reflection and visual traits.

| statistics | FD/FI | R/I | A/V |
|-------------------------|-------|------|------|
| number of students (N) | 38 | 38 | 38 |
| total items (k) | 12 | 12 | 12 |
| mean (x) | 6.55 | 7.76 | 4.02 |
| mode | 8 | 9 | 5 |
| median | 7 | 8 | 4 |
| standard deviation (SD) | 2.13 | 2.03 | 2.15 |

Table 1. Statistical analysis.

The first of the hypotheses for this study suggested that low reliability values for the 3 constructs might be obtained because of the limited number of participants validating the CALL-based questionnaire. In fact, the values obtained were even lower than expected. The KR20s are summarized in table 2.

| | FD/FI | R/I | A/V |
|-------------|-------|-------|-------|
| KR20 | 0.427 | 0.557 | 0.572 |

Table 2. KR20 for each construct.

It seems, at first, that most of the lack of internal consistency lies in the students' response to the general section and this affects the overall estimate of reliability. It could be assumed that by omitting this section, a higher estimate of reliability could be obtained, but doing this would result in losing important information. These findings support Brown's (1987) claim that cognitive styles may not be stable traits in adults, but given the limited number of questions and the number of participants validating the questionnaire, no certain claim can be made at this point. Another possible reason for the low values may be the different components embedded in the definition of FD/FI, as this construct gave the lowest coefficient of reliability. Therefore, the items that measure this construct need to be carefully revised: the questionnaire emphasizes the reliance on internal versus external factors and not many questions are devoted to measuring the interpersonal component or the restructuring abilities component.

As predicted, no statistically significant correlation was found among the three constructs measured by the CALL based LS questionnaire. Although these constructs form part of a more general construct called LS, each construct tends to be identifiable and distinguishable, reflecting a specific type of LS that uses different means to perceive, process, and interact with information.

The Spearman correlation coefficients between the three constructs and their respective 95% confidence intervals are summarized in Table 3. FD/FI and R/I were the constructs most closely correlated ($r=0.26$) but, according to the results for the confidence intervals, there is no statistically significant correlation (at a 95% level) between any pair of constructs.

| | FD/FI vs R/I | FD/FI vs AV | R/I vs AV |
|---|----------------|---------------|---------------|
| Correlation coefficient (r) | 0.26 | -0.14 | -0.06 |
| 95% confidence interval for the Spearman correlation | [-0.015, 0.51] | [-0.46, 0.17] | [-0.39, 0.28] |

Table 3. Correlation coefficients between the three constructs.

Analysis of the correlation between each of the constructs in different sections could be made to verify if the assumption that an "identified learning style would hold good whatever the learning style context" (S. Atkinson, 2001: 8) is also true when learning language through computer-assisted instruction.

4. Pedagogical Implications

Future teachers have the responsibility of training students to be capable of deciding what their best learning path is. They should be ready to assist and guide students through the process of reflecting on how they learn best and LS diagnosis is the first step to achieving this. "Teachers should make learners aware of the need of strategic, autonomous learning and should train them in the effective use of those strategies" (C. Chapelle, 1995: 161). Students should in turn be able to identify the strategies they draw on when learning. They should be aware of how they learn best and of the type of materials and activities that best fit their LS.

Among the many constraints that teachers have to overcome when using questionnaires like this are “misunderstanding” and “labeling”:

- misunderstanding, because students may think they are being deceived when in a language class they are required to fill in forms that inquire how they learn best;
- labeling, because a general perception among students is that some LS are better than others.

These types of reactions may be due to the lack of exposure to activities in which they are asked to self-evaluate and become aware of what strategies are more beneficial to them. When using this kind of tool, instructors should spend sufficient time explaining each of the items and the choices presented in the instrument. They should make sure students understand the purpose of having them complete such questionnaires in class. Students should also be acquainted with the topic of LS and learning differences, and most importantly, they should be aware of the importance of LS diagnosis.

The teacher’s role is crucial in preventing students from worrying about being labeled or having the “wrong” style. The teacher must “stress that no style is better than another” (K. Kinsella, 1995: 188), that they may be seen as complementary traits, and that more precise information about each learner’s learning characteristics can be obtained if students respond honestly to the questionnaires.

Conclusion

This paper discussed some of the underlying theories of a questionnaire devised to specifically measure three constructs: FD/FI, R/I, and A/V as related to CALL. The task characteristics model provided by Bachman and Palmer (1996) was used to describe the questionnaire. The results obtained were presented and discussed.

The instrument presented in this study serves as a concrete tool for introducing the topic of learner differences. It may be used to lead students to a “more heightened understanding and appreciation of their individual learner characteristics” (K. Kinsella, 1995: 187). As the results can be interpreted with respect to tasks developed using computers as a language learning tool, the questionnaire may indeed prove “useful in the classroom” (J. Reid, 1990: 387).

Despite its potential use as a teaching or as a consciousness-raising tool, no attempt to use the results for CALL-based research should be made until its internal consistency has been improved. One possibility would be to add more items to each of the constructs measured, or to omit some of the sections that are not specifically related to language skills. To ascertain what types of items affect reliability, a more detailed statistical analysis should be carried out. Since this is a pilot study, the results can be used to implement some changes and to improve the questionnaire before it is actually used for research purposes.

Once internal consistency is improved, a number of people may benefit from

the results obtained. Students, for instance, will become aware of their LS; it may lead them towards the basic steps that need to be taken to reach autonomy. Teachers can understand better how students learn, so instructional materials can be adapted to meet students' real needs. CALL-based material designers can use the results to design activities which address more than one LS at once. I second Keefe's (1987: 32) thoughts when he states, "an understanding of the way students learn is the door to educational improvement. And learning styles diagnosis is the key to understanding of student learning".

REFERENCES

- ABRAHAM, Roberta, 1985. "Field independence-dependence and the teaching of grammar". *TESOL Quarterly*, 19, p. 689-702.
- ATKINSON, Stephanie, 2001. "Cognitive styles and computer aided learning (CAL): Exploring designer and user perspective". *Proceedings of the Conference on New Media in Technology in Education*. The Netherlands.
- BACHMAN, Lyle & PALMER, Adrian, 1996. *Language Testing in Practice*. Oxford: Oxford University Press.
- BIGGS, John B. & MOORE, P.J. 1993. *The Process of Learning* (3rd ed). Englewood Cliffs, NJ: Prentice Hall.
- BROWN, H. Douglas, 1987. *Principles of Language Learning and Teaching* (2nd ed). Englewood Cliffs, NJ: Prentice Hall.
- CHAPELLE, Carol, 1995. "Field independence/dependence in the L2 classroom". In REID, J. (ed). *Learning Styles in the ESL/EFL Classroom*. Boston: Heinle & Heinle, p. 158-168.
- CHAPELLE, Carol & GREEN, Pat, 1992. "Field independence / dependence in second language acquisition research". *Language Learning*, 42/1, p. 47-83.
- DORNYEI, Zoltan, 2003. *Questionnaires in Second Language Research*. Mahwah, NJ: Lawrence Erlbaum Associates.
- DUNN, Rita, DUNN, Kenneth & PRICE, G.E. 1975. *The Learning Style Inventory*. Lawrence, KA: Price Systems.
- GOLDSTEIN, Kenneth & BLACKMAN, S. 1978. *Cognitive Style: Five Approaches and Relevant Research*. New York: Wiley.
- HONEY, Peter & MUMFORD, Alan, 1992. *The Manual of Learning Styles*. Maidenhead: Peter Honey.
- JAMIESON, Joan, 1992. "The cognitive styles of reflection / impulsivity and field dependence / independence and ESL success". *The Modern Language Journal*, 76/3, p. 491-501.

- JONASSEN, David H. & GRABOWSKI, Barbara L. 1993. *Handbook of Individual Differences, Learning, and Instruction*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- KAGAN, Jerome, 1966. "Reflection-impulsivity: The generality and dynamics of conceptual tempo". *Journal of Abnormal Psychology*, 71, p. 17-24.
- KEEFE, James, 1987. *Learning Style: Theory and Practice*. National Association of Secondary School Principals.
- KINSELLA, Kate, 1995. "Understanding and empowering diverse learners in the ESL classroom". In REID, J. (ed). *Learning Styles in the ESL/EFL Classroom*. Boston: Heinle & Heinle, p. 170-194.
- KOLB, David A. 1976. *The Learning Style Inventory: Technical Manual*. Boston: McBer.
- JAMIESON, Joan & CHAPELLE, Carol, 1988. "Using CALL effectively: What do we need to know about students?" *System*, 16/2, p. 151-161.
- MEREDITH, R. Alan, 1978. "Improved oral test scores through delayed responses". *Modern Language Journal*, 62, p. 321-327.
- NGEOW, Karen, 1999. "Classroom practice: Enhancing and extending learning styles through computers". In EGBERT, J. & HANSON-SMITH, E. (eds). *CALL Environments, Research, Practice and Critical Issues*. Alexandria, VA: TESOL.
- OXFORD, Rebecca, 1990. *Language Learning Strategies: What Every Teacher Should Know*. Boston: Newberry House.
- OXFORD, Rebecca, 1993. *Style Analysis Survey (SAS)*. Tuscaloosa, AL: University of Alabama.
- REID, Joy, 1990. "The dirty laundry of ESL survey research". *TESOL Quarterly*, 24, p. 323-338.
- REID, Joy, 1995. *Learning Styles in the ESL/EFL Classroom*. Florence, KY: Heinle & Heinle.
- RIDING, Richard J. & PEARSON, F. 1994. "The relationship between cognitive style and intelligence". *Educational Psychology*, 16, p. 81-106.
- TENNANT, Mark, 1988. *Psychology and Adult Learning*. London: Routledge.
- WINTERGERST, Ann C., DECAPUA, Andrea, & ITZEN, C. Richard, 2001. "The construct validity of one learning styles instrument". *System*, 29/3, p. 385-403.
- WITKIN, Henry & GOODENOUGH, Donald, 1981. *Cognitive Styles: Essence and Origins. Field Dependence and Field Independence*. New York: International Universities Press.

WITKIN, Henry, OLTMAN, Philipp, RASKIN, Evelin & KARP, Stephen, 1971. *A Manual for the Embedded Figures Test*. Palo Alto, CA: Consulting Psychologists Press.

APPENDIX: CALL-based LS questionnaire

Directions:

For each of the questions below circle either “a” or “b” to indicate your answer Please choose only one answer for each question. If both “a” and “b” seem to apply to you, choose the one that applies more frequently.

General

1. Using computers to learn a language seems more attractive to you if:
 - a) you decide on the type of exercises you want to work on.
 - b) the computer guides you and tells you what to do.
2. You prefer working with software that:
 - a) requires you to complete all the exercises.
 - b) allows you to skip some exercises.
3. You would prefer to use the computer to:
 - a) listen to spoken language.
 - b) read written texts.
4. You prefer working with software that requires you to:
 - a) type answers to questions.
 - b) record answers to questions.
5. You prefer working with programs that:
 - a) force you to wait before you respond to a question.
 - b) let you answer as soon as you are ready.
6. You prefer working with programs that include:
 - a) timed exercises.
 - b) non-timed exercises.

Listening and Speaking

1. You would prefer to listen to a dialogue:
 - a) using the audio-visual (video) option.
 - b) using the audio-only option.
2. After using the audio option and being unable to understand a word, you would:
 - a) listen to it and repeat it as many times as possible.
 - b) try to figure out how the word is spelt.
3. To practice the pronunciation of a new word, you would:
 - a) record it, then listen to the new version provided by the computer.
 - b) listen to the version provided by the computer, and then record it.
4. After you have recorded the pronunciation of a word or text, you are likely:
 - a) to compare it to the original.
 - b) not to compare it to the original.
5. When listening to a text, it is most likely that you:
 - a) listen to it again to make sure your answers are right.
 - b) make your choice and continue with the next exercise.

6. After realizing that your pronunciation of a word differs from the one provided by the computer, you are likely to:
 - a) record it again.
 - b) skip it and continue with the next one.

Reading

1. If you have a text on the screen, you prefer to:
 - a) listen to it while you are reading it.
 - b) read it while you construct mental images of it.
2. You find it easier to read a text on the screen that:
 - a) uses images.
 - b) includes audio files.
3. When answering true-false questions based on reading and you are not sure of the correct answer, you are likely to:
 - a) skip that question and continue answering.
 - b) think about it and then answer it.
4. When answering a true-false question based on a reading you would:
 - a) scroll through the text to read the passage again.
 - b) trust your first choice.
5. When you are surfing the net, you are more likely to read about:
 - a) topics you are familiar with.
 - b) totally new topics.
6. You are more likely to read:
 - a) what you have been asked to even if you know about the topic.
 - b) what you consider you need to read.

Writing

1. If you type a word and it turns out to be incorrect, you are more likely to:
 - a) use the speller option at once.
 - b) retype the word as many times as needed for it to be correct.
2. If you are required to write a letter, you are likely to:
 - a) follow models provided by a computer application like Word.
 - b) create your own model.
3. You would prefer to transcribe:
 - a) video materials.
 - b) audio materials.
4. You would prefer to write a story based on:
 - a) a set of pictures.
 - b) an audio description.
5. If a sentence you enter turns out to be wrong, you are more likely to:
 - a) check it and retype it again.
 - b) continue with the next one without correcting it.
6. After typing a text , you are more likely to:
 - a) review it before submitting it.
 - b) submit it at once.

Grammar

1. You understand grammar better if a program:
 - a) uses charts and graphs to demonstrate concepts.
 - b) includes oral explanations.

2. You prefer to answer grammar-based questions if you are required to:
 - a) type and see them.
 - b) save and hear them.
3. If you suspect that a grammar-based answer is wrong, you are likely to:
 - a) use the help option to figure out what the mistake might be before checking it.
 - b) try again without using any help from the computer.
4. If after receiving computer-generated feedback you discover that a grammar answer you entered is incorrect, you are more likely to:
 - a) try as many times as necessary until you get it right.
 - b) try one or two more times and then use the answer check option.
5. If a grammar question is too difficult to answer, you are likely to:
 - a) read it and save it for later.
 - b) read it and answer it at once, no matter if your answer is incorrect.
6. If a grammar question is too easy to answer, you are likely to:
 - a) answer it quickly without checking it again.
 - b) answer it carefully and then check it to make sure that it is correct.

Vocabulary

1. When you find a new word in a text, you are more likely to:
 - a) listen to it, using the sound option.
 - b) look it up using the dictionary option.
2. It is easier for you to remember a word if you:
 - a) have seen it in its written form.
 - b) have heard it.
3. To answer a vocabulary question quickly, you would:
 - a) use the hint option.
 - b) give it a try trusting your knowledge.
4. If you are being asked for the meaning of a word and you do not know it, you:
 - a) make your choice at once.
 - b) save the question for later.
5. If you want to know the meaning of a new word, you are more likely to:
 - a) look it up in the dictionary.
 - b) guess the meaning from context.
6. To answer a vocabulary question accurately, you would:
 - a) use the hint option.
 - b) give it a try trusting your knowledge.