

AMERICAN UNIVERSITY OF ARMENIA

Yerevan

**Learning Style Preferences and Learning
Strategy Use of Armenian University Learners**

A thesis submitted in satisfaction
of the requirements for the degree Master of Arts
in Teaching English as a Foreign Language

by


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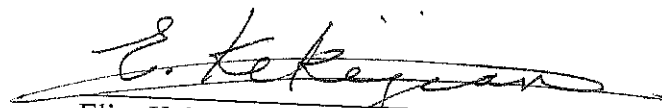
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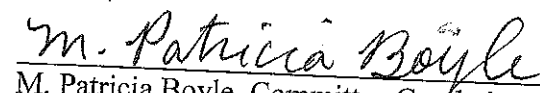
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2006

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2004

Acknowledgements

We would like to express our deepest gratitude to all the people who supported us in our work towards the completion of our Master's thesis. Particularly, to our supervisors: Patricia Boyle, Elisa Kekejian and Dean of the AUA Department of English Programmes, Marianne Celce-Murcia, for their valuable guidance and indispensable encouragement.

Our special thanks to Alexan Simonyan, Associate Professor of the AUA College of Engineering, for assisting in our statistical analysis.

We are also thankful to the Yerevan universities that granted their kind permission to make their students available to us for data collection.

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ABSTRACT OF THE THESIS

In Soviet times language teaching in Armenia was dominated by a teacher-centered, book-centered and grammar-translation method. There was a 'one-size-fits-all' type of syllabus tailored for all students, irrespective of their personal inclinations, and teacher instructions were presented mostly through lecturing; the learning material was presented explicitly and students were to memorize grammar rules and long lists of vocabulary. This is not to underestimate the professional qualities of the teachers working in the educational system, since most of them were really knowledgeable in their profession and cared about their students, but the application of innovative approaches was not rewarded at that time. Nevertheless, it should be admitted that there were a lot of positive aspects in the traditional educational system, and many of the approaches applied then are still applicable. However, today the educational system in Armenia is starting to change and more contemporary methods are starting to prevail in teaching. Such contemporary methods of language teaching aim at communication, and the learner is regarded as a "...whole person" who uses intellectual, social, emotional, and physical resources and is therefore not merely a cognitive/metacognitive information-processing machine" (Oxford, 1992/1993). This means that the learners have unique individualities and their own preferences toward learning. And these factors may be crucial in ensuring success in language learning.

Learning styles and language learning strategies are key factors that influence the process of language learning. Learning styles make the language learners unique; whereas language learning strategies help learners to become aware of the way they use their language learning aptitude. A number of studies, for example Harshbarger et al. (1986, as cited in Oxford, 1996), Willing (1988, as cited in Oxford, 1996) and Reid (1995, as cited in Oxford, 1996) have convincingly demonstrated that there is a strong direct relationship between

learning styles and learning strategies, and that the consideration of this relationship can lead to improvements in language learning.

This research is a statistical survey that aims to identify whether there is one learning style that is shared by most Armenian university students studying English. The paper also seeks to investigate the relationship between learning styles and learning strategies, i.e., whether the strategy choice of Armenian students is driven by their individual learning style preferences.

The students' learning styles were investigated and identified by means of the SAS (1993), whereas the use of learning strategies was investigated by means of the SILL (1989) – both questionnaires designed by Rebecca Oxford. The research was conducted in five major educational institutions of Armenia so that the results could be generalized to the Armenian student population. Although, approximately 70 students participated in the study, only 60 were eventually considered in the data analysis. The rest were discarded for a number of reasons, later discussed in Chapter 4.

The results of the study revealed that three out of the eleven learning styles identified by Oxford, namely global, closure-oriented, and extroverted were shared by the majority of Armenian university learners. The study also showed that each learning style had a particular pattern of strategy use, in which one or two strategy groups were more actively used than the others by the representatives of that style. The study also demonstrated that overall learning strategy use of Armenian university learners is medium level, i.e. Armenian learners were not very active users of learning strategies. Nevertheless, no low strategy users were observed either. This means that although Armenian learners are aware of learning strategies, they use them moderately.

The validity of the identification of typical learning style was established by means of the Chi-square statistical test, since the variables were measured on a nominal scale. The

validity of the relationship of the learning styles and strategies was established by means of a one-way Analysis of Variance (ANOVA) statistical test, as the variables were measured on both nominal and ordinal scales. The study demonstrated that there was a statistically significant and meaningful relationship between learning styles and strategies. This is to say, the learners' strategy choice depends on their individual learning style preference. However, since this research is the first in its kind conducted in Armenia, it can serve only as a starting point for possible directions in future research. Consequently, further research is needed to make more conclusive claims.

This research paper is a joint thesis of two authors: Hranush Ginosyan and Shoghik Sargsyan.

Shoghik Sargsyan primarily dealt with the analysis of the SAS questionnaire, as well as the discussion of the identified learning styles typical of Armenian university learners (Part 1 of the research findings).

Hranush Ginosyan was primarily responsible for the analysis of the SILL questionnaire as well as for investigating the relationship between learning styles and language learning strategies (Part 2 of the research findings).

The responsibility for the review of the literature, formulation of the research questions and the hypotheses, the data collection, the discussion of the limitations of the study, potential threats to the internal and external validity of the study and the conclusion with suggestions for further research was shared equally by both of the authors.

CHAPTER 1: INTRODUCTION

1.1. Introduction

In the language classroom, as in any other classroom, educators should be aware of the fact that every learner has a unique personality and his/her individual traits are reflected in his/her learning preferences; in other words, students use learning styles and learning strategies during the learning process. For teachers it is important to understand, respect, and respond to students' individual preferences. By consciously accommodating to their students, teachers can encourage most students to become successful language learners. Only this can help teachers go beyond the "mere rhetoric of student-centered classroom" (Kinsella, 1997) and greatly encourage most students to become successful language learners. As the first step in this direction, we should identify which learning styles and strategies are shared by Armenian university students. This will eventually lead to the selection of appropriate instructional approaches and materials to enhance student learning.

For teachers it is really vital to realize this, as difficulties that some students face in the classroom are erroneously attributed to insufficient interest or practice. Regrettably, this may impede students' foreign language acquisition. On the other hand, students whose learning styles and strategies are compatible with teacher practices in their classrooms tend to retain acquired knowledge longer, apply it more effectively, and keep positive attitudes toward the subject long after completing the course. By addressing their students' learning preferences, the teacher's goal should be to encourage his/her students to improve their weaker skill areas.

This thesis presents the results of a research study conducted in five major institutions of Armenia: Yerevan State University, Yerevan State Agricultural University, Yerevan State Architectural University, "Galik" University of Yerevan (private), and American University

of Armenia (AUA), which offers only graduate programs primarily through the medium of English. In all these institutions English is taught as an academic subject. The study focused on the identification of the overall learning style or styles of Armenian learners and on the investigation of the relationship between the learners' learning style preferences and their language learning strategy choice.

In this study leaning styles are considered as 'individual's natural, habitual, and preferred way(s) of absorbing, processing, and retaining new information and skills' (Reid, 1995, p. viii) or "cognitive, affective, and physiological traits that are relatively stable indicators of how learners perceive, interact with, and respond to the learning environment" (Keefe, 1979a, as cited in Reid, 1987, p. 4).

As for language learning strategies, they are considered as "specific actions, behaviors, steps, or techniques that students (often intentionally) use to improve their progress in developing L2 skills. These strategies can facilitate the internalization, storage, retrieval, or use of the new language" (Oxford, 1992/1993, p. 124). Research demonstrates that appropriate use of language learning strategies, which include a great number of behaviors (such as seeking out conversation partners, guessing intelligently, or summarizing), results in improved general performance or improved performance in a specific skill. Research indicates that students' choice of learning strategies are influenced by various factors, such as motivation, career/academic specialization, sex, cultural background, nature of task, age, and stage of language learning. Another key factor recently identified as influencing strategy choice is language learning style. There is a strong claim that "when allowed to learn in their favorite way, unpressured by the learning environment or other factors, students often use strategies that directly reflect their preferred learning. For example, students with an analytic learning style prefer strategies such as contrastive analysis, rule-learning, and dissecting words and phrases, while students with a global style use strategies

that help them find the big picture (i.e., guessing, scanning, predicting)” (as cited in Oxford, 1992/1993).

Armenian learners’ overall learning styles were investigated by means of the Style Analysis Survey (SAS) questionnaire, the results of which were computed via Chi-square statistical test. As for the relationship between learners’ choice of learning strategies and their underlying learning style preferences, it was explored by means of the Strategy Inventory for Language Learning (SILL) questionnaire. The statistical link between these variables was established by the use of mean comparison, namely an Analysis of Variance (ANOVA) statistical test.

The research was conducted in the middle of the academic year in five different institutions of higher education. This was done on purpose, since after three months of language classes the learners could better assess their learning experience. The institutions were selected to ensure the wider representation in the research data so that its findings could be generalized to the Armenian student population as a whole. The respondents’ academic majors were quite diverse, ranging from hard science to humanities including subjects such as journalism, engineering, economics, agriculture etc.

The data collection instruments used for research purposes were:

- Style Analysis Survey (SAS) to identify learning styles typical of Armenian learners;
- Strategy Inventory for Language Learning (SILL) to investigate the extent of respondents’ learning strategy use;

After the data collection procedure the data were analyzed qualitatively by means of coding, classifying, reducing and organizing them in tables. Thereafter, a quantitative analysis was used to test the formulated hypotheses (Chapter 3). The overall learning styles were identified by means of Chi-square statistical test, whereas the relationships between

learning styles and strategies were investigated through mean comparison, namely an ANOVA statistical test.

The possible threats to the validity of the study may be as follows:

- Although the majority of the respondents were unfamiliar with the concepts of learning styles and strategies, AUA students might have intentionally used some strategies during TOEFL examination;
- The respondents might have presumed that their grades would be affected by their responses to our survey, even though their total anonymity was ensured;

The findings of this research are sufficiently convincing to serve as a starting point for a number of possible directions for future research and they demonstrate that taking into consideration such personality factors as learning styles and strategies can ensure improved language proficiency.

1.2. Review of the Literature on Learning Styles

During the past decades, educational research has identified a number of factors that account for some of the differences in how students learn (Reid, 1987). Among such factors, many researchers have investigated learning styles. Overall, it was identified that each person has around 21 learning styles, while only about 6 to 14 are his/her more preferred ones (Dunn, Gemake, Jalali, & Zenhausern, 1990, as cited in Reid, 1995). However, the majority of researchers admit that the most difficult problem in researching learning styles is simply defining the term 'learning styles'. In relevant literature the term is used in very confusing ways, often interchangeably with other terms such as cognitive style, affective style or even learning strategy (Eliason, in Reid, 1995). Being one of the prominent figures in this field, Reid (1995, p. viii) defines learning styles as an 'individual's natural, habitual, and preferred way(s) of absorbing, processing, and retaining new information and skills'. According to other characteristics, learning styles are "cognitive, affective, and physiological traits that are

relatively stable indicators of how learners perceive, interact with, and respond to the learning environment" (Keefe, 1979a, as cited in Reid, 1987, p. 4). An onion metaphor used by Claxton and Murrell is very descriptive (as mentioned by Eliason, in Reid, 1995). Here learning styles are depicted as four layers of an onion: basic personality characteristics, information-processing characteristics, social interaction characteristics, and instructional preferences, where the first layer is the most stable characteristic, with each successive layer being more amenable to changes.

Regardless of all these and many other definitions, one agreed-upon definition of learning styles is still lacking. Kinsella (1997) thinks that this is quite understandable, since a learning style encompasses concepts like perception, cognition, conceptualization, affect and behavior among others, notions that are too broad to be defined in a straightforward way.

Learning styles are conventionally subdivided into cognitive, sensory and affective groups. However, it is a largely acknowledged fact in the educational literature that the understanding of this area is somewhat complicated by the fact that many researchers label learning styles with different, often overlapping or even mutually exclusive terminology. Such confusion renders learning styles less practical for classroom use. What is more, the difference between learning styles and learning strategies is sometimes obscure.

Reid (1987) notes that through the past thirty years researchers have focused mostly on the concept of cognitive styles, i.e. the ways the mind actually functions, processes information or is affected by individual perceptions. She mentions various groups of researchers that have worked with pieces of that complex cognitive profile and again, each group had its own taxonomy and terminology that sometimes appear to overlap. Thus, (as cited in Reid, 1987), Witkin (1976), Witkin, Moore, Goodenough, and Cox (1977), and Witkin, Moore, Oltman, et al. (1977) have written widely about field independent (analytic)/field dependent (global) approaches to perceiving the environment and processing

information, Kagan (1966, as cited in Reid, 1987) and Kagan and Messer (1975, as cited in Reid, 1987) have investigated conceptual tempo: reflectivity (slower, more calculated guesses) versus impulsivity (quick, risk-taking guesses) in learners' responses. Hill (1971, as cited in Reid, 1987) has worked on the style mapping that reveals preferred types of media, teaching strategies, and structure of the environment. Messick and associates (1976, cited in Reid, 1987) have listed more than 20 dimensions of cognitive style, including those of Witkin and Kagan as well as sensory (perceptual) modality preferences. Kolb (1976, 1984, as cited in Reid, 1987) has introduced the terms accommodator, diverger, converger, and assimilator to describe students' approaches to learning. Gregorc (1979a, 1979b, as cited in Reid, 1987) has worked out his own categories of learning—concrete sequential, abstract sequential, abstract random, and concrete random—that describe learner's mediation abilities and capacities.

In the mid- to late 1970s, researchers started to aim more at external, applied aspects of learning styles. Style is regarded as a learners' permanent quality that is reflected through the learning strategies or the learning behavior of an individual, "a quality that persists though the content may change" (Fischer & Fischer, 1979, as cited in Reid, 1987, p. 245).

Development of learning style research takes its roots mostly from Jung's works on personality types. Jung (1970, as cited in Reid, 1987) described human personality with four bipolar descriptors: Introvert - Extrovert, Sensor - Intuitive, Thinker - Feeler, and Perceiving - Judging, labeling individuals according to which end of each bipolar descriptor was more characteristic for them. Thus, an individual could be, say, ESTJ, i.e. extroverted, sensor, thinker, perceiving. Myers and Myers-Briggs (Myers, 1958, 1962, as cited in Krause) have put Jung's work on psychological types into more practical terms and developed an instrument of 126 questions accordingly called the Myers Briggs Type Indicator (Myers & McCaulley, 1958). It classifies individuals by the four bipolars, yielding 16 distinctive

personality types. A much disputed point about this instrument, however, is that according to it an individual can be either extrovert or introvert, without any allowance for differing degrees of extraversion or introversion, or of any of the other bipolar distinctions.

The list of milestone studies as mentioned on www.learningstyles.com includes those conducted by DeBello, 1985; Dunn, DellaValle, Dunn, Geisert, Sinatra, & Zenhausern, 1986; Dunn, Dunn, Primavera, Sinatra, & Virostko, 1987; Dunn, Krinsky, Murray and Quinn, 1985; Dunn, Cavanaugh, and Zenhausern, 1982; Giannitti, 1988; Hill, 1987; White, 1981; Hodges, 1985; Jarsonbeck, 1984; Kroon, 1985; Lemmon, 1985; Lynch, 1981; MacMurren, 1985; Martini, 1986; Miles, 1987; Murrain, 1983; Pizzo, 1981; Shea, 1983; and Spires, 1983. These studies were targeted at identifying the relationship(s) between academic achievement and individual learning style and have provided consistent support for the following statements: a) students do learn differently from each other; b) students' success in different subject areas is related to how individuals do, in fact, learn; c) when students are taught with approaches and resources that complement their unique learning styles, their achievement is significantly increased. The same source names studies bringing up practical evidence to the positive effect that is achieved when students are taught in ways that parallel their preferred ways of learning - Ballinger & Ballinger, 1982; Carruthers & Young, 1980; Cavanaugh, 1981; Dunn, 1981; Fiske, 1981; Dunn & Griggs, 1987, 1989a, 1989b; Gardiner, 1983; Hodges, 1982, 1983; Jenkins, 1982, 1986; Lemmon, 1982, 1985; Pizzo, 1982; Vigna & Martin, 1982; and Wheeler, 1980.

Christison (1996) mentions another theory closely related to learning styles, it is Gardner's theory of multiple intelligences (MI). She considers it as great potential for helping to revolutionize our concept of human capabilities. Gardner's (1983, as cited in Christison, 1996) basic premise is that intelligence is not a single construct: individuals have at least seven distinct intelligences. Gardner's seven intelligences are: verbal/linguistic,

musical, logical/mathematical, spatial/visual, bodily/kinesthetic, interpersonal, and intrapersonal. The author claims that application of the MI theory helps language teachers create an individualized environment. For teachers, the first step can be identifying usual classroom activities and categorizing them according to the multiple intelligence taxonomy, then to review classroom routines to include neglected intelligences. Christison (1996) deems it very important to raise students' awareness about their own intelligences to enable them connect their intelligences to their daily activities.

Self-reporting questionnaires whereby students select their preferred learning styles are the primary instruments for the identification and measuring of learning styles. However, because of the discrepancies and inconsistencies in the way the term learning style is used, there is still uncertainty over what characteristics are most important in determining individual learning styles. For example, the Myers-Briggs Type Indicator (MBTI; Myers&Briggs, 1987, as cited in DeBello, 1990) measures personality traits such as extroversion-introversion; Kolb's (1976, as cited in DeBello, 1990) Learning Styles Inventory measures how we process information; Oxford (1993) in her Style Analysis Survey concentrated on 11 styles classified into five categories; Keefe and Monk (1986) in their Learning Style Profile embraced different learning styles in perhaps the most comprehensive way – the questionnaire tests 24 styles in four categories, but the Learning Style Profile is designed only for use with high school native English speakers.

Special attention should be drawn to one of the most fundamental studies in learning styles conducted by Dunn and Dunn (1972, cited in DeBello, 1990), which led to the development of one of the most widely used learning style questionnaires, i.e., the Learning Style Inventory (Dunn, Dunn, & Price, 1975, cited in DeBello, 1990). Out of the 21 identified learning styles, R. Dunn (1983, as cited in DeBello, 1990) and Dunn and Dunn (1979, as cited in DeBello, 1990) have focused on perceptual learning styles, i.e. the variations among

learners in applying their senses to understand, process, and retain experience. There is a great amount of research concerned with the identification of students' learning style characteristics conducted with the use of the Learning Style Inventory. Below we provide a brief overview of just a minor part of this research as presented at the www.learningstyles.com.

A doctoral investigation undertaken by Spires (1983, as cited in DeBello, 1990) revealed that implementation of a learning styles program resulted in significant gains in reading and mathematics achievement on standardized achievement tests.

The Learning Style Inventory (Dunn, Dunn, & Price, 1978, cited in DeBello, 1990) was administered to students in grades 3 through 6, as well as the Learning Style Inventory Primary Version (Perrin, 1982, cited in DeBello, 1990) to grades K through 2. Analyses of the data once again indicated that teaching students through their individual learning styles resulted in significant achievements.

An extensive study was conducted to develop guidelines for providing instruction to students that are usually classified as poor achievers, learning disabled, discipline problems, or dropouts when their learning styles are not accommodated in conventional classrooms (Klavas, Dunn, Griggs, Geisert, Gemake, & Zenhausern, 1994, as cited in DeBello, 1990). It has been demonstrated that when instruction was redesigned to respond to their particular learning-style preferences, academic reversals had occurred.

Marino (1993, cited on www.learningstyles.com) describes his efforts to tailor class instruction and homework to results obtained from a Learning Styles Inventory and argues that students will accept and even learn from homework provided that its design takes into consideration students' learning styles.

Klavas (1994, cited in DeBello, 1990) conducted an experiment in modifying teaching methods to accommodate varied learning styles of students that were revealed

through the Learning Styles Inventory. The result of such modifications resulted in dramatically dropped discipline problems and abrupt improvements in test scores.

An interesting study on sound preferences of learners was conducted by Pizzo (1981, as cited on www.learningstyles.com). Results of exposure to either noise or sound revealed that students who preferred quietness performed best in a quiet acoustic environment, whereas students who preferred sound performed best in a noisy one. In an environment that complemented their learning style preference, students had higher scores and demonstrated stronger intellectual abilities.

Overall, thirty-six broad-based experimental studies conducted between 1980-1990 which have been based on the Learning Style Inventory and which provided a database of 3,181 participants determined that matching students' learning-style preferences with compatible educational methods is highly beneficial to their academic achievement.

Carbo (1983, as cited in Reid, 1987), who particularly focused on perceptual styles of readers, found that good readers are visual and auditory type of learners, while poor ones are tactile and kinesthetic.

A study of Domino (1979, as cited in Reid, 1987) showed, that when students are taught in their preferred learning styles, they scored higher than those taught in instructional styles inconsistent with their learning styles.

Extensive investigation was undertaken for the New York Board of Regents, which looked at the role of culture, left vs. right brain theory, and environmental factors in addition to cognitive differences. The major conclusions of that board were that students do have major learning style differences, and that designing and using multiple instructional strategies to teach to these styles can improve teaching and learning (Yale, 1988, as cited in Reid, 1995).

Since none of the available learning style instruments encompasses all aspects of learning styles, we therefore always see a fragmented picture of what we are measuring and cannot even agree about how best to measure learning styles (Eliason, in Reid, 1995). In addition to the problem of which styles to measure, many learning style instruments have no serious theoretical rationale behind them (Bonham, 1988; Corbett&Smith, 1984; Grash, 1984, as mentioned by Eliason, in Reid, 1995), therefore the validity of such tests is questionable. As Grasha puts it (cited by Eliason, in Reid, 1995, p.20) most instruments are "grounded more in the experiences of the authors than in theories of human learning".

Nunan (1995) claims "although there will never be a one-to-one relationship between teaching and learning, there are ways in which teachers and learners and teaching and learning can be brought closer together" (p. 134). As a key concern, he cites a question framed by Allwright (1984, cited in Nunan, 1995): "Why don't learners learn what teachers teach?" (p. 3). A teacher can be really knowledgeable and caring but still fail to educate the students in a proper way. Such gaps between teaching and learning can be narrowed, as Nunan (1995) suggests, when learners are given the possibility to identify their own preferred learning styles and to experiment with alternative styles. According to him, learning style research largely supports what experienced classroom practitioners know intuitively: that students absorb new material and skills through their senses, whereas some senses are more preferable for them than others.

Research in second language learning styles has focused extensively on the importance of cognitive styles in classroom and on conscious learning strategies. Much of the work concerns the interaction of cognitive styles and affective variables with situational demands (Brown, 1974; Ely, 1986; Hatch, 1974; Heyde, 1977; Naiman, Fröhlich, & Todesco, 1975; Tarone, Swain, & Fathman, 1976; Tucker, Hamayan, & Genesee, 1976, as cited in Reid, 1987). Other studies deal with the role of affective elements and cognitive styles in

academic achievement (Abraham, 1983; d'Anglejan, Painchaud, & Renaud, 1986; Bassano, 1986; Bialystok, 1985; Chapelle & Roberts, 1986, as cited in Reid, 1987). Wong Fillmore (1986, as cited in Reid, 1987) has studied the process of learning English in bilingual and ESL classrooms, in particular the role of cultural factors in second language acquisition.

Another part of research in second language learning demonstrated that differences in learning strategies of learners are dependent on differences in learning styles, affective styles, and cognitive styles. Some of these studies (Bialystok & Fröhlich, 1978; Carver, 1984; Krashen, 1982; Oxford-Carpenter, 1985; Wenden, 1984, 1986a, as cited in Reid, 1987) investigated the conscious learning strategies of NNS students (e.g., practicing, monitoring, inferencing, memorizing, and self-directed learning). Oxford (1993) also maintains that language learning style (a person's general approach to language learning) is a key determiner of L2 strategy choice. She notes, that when allowed to learn in their favorite way, unpressured by the learning environment or other factors, students often use strategies that directly reflect their preferred learning style. For example, students with an analytic learning style prefer strategies such as contrastive analysis, rule learning, and dissecting words and phrases, while students with a global style use strategies that help them find the big picture (i.e., guessing, scanning, predicting) and assist them in conversing without knowing all the words (i.e., paraphrasing, gesturing). Visually oriented students use strategies like listing, word grouping, and so on, while those with an auditory preference like to work with tapes and practice aloud. Students whose style includes tolerance for ambiguity use significantly different learning strategies in some instances from those used by students who are intolerant of ambiguity. In some studies a statistical link between students' L2 learning strategies and their underlying learning styles was also found (e.g. Ehrman & Oxford, 1990; Ely, 1989, as cited in Oxford, 1993).

Research has also shown that it is possible for students to stretch beyond their learning style preferences. This can be done by using a variety of valuable L2 strategies that are initially uncomfortable for them. So, strategy training is particularly useful in helping students use new strategies beyond their normal style boundaries. For instance, for certain tasks, global students sometimes need to use analytic strategies like reasoning deductively (from a rule to a specific case), and analytic students sometimes need to move away from the details to look at the general meaning through global strategies like skimming and summarizing. Strategy training that takes learning style into account helps students avoid "style wars" with teachers and fellow students and can reveal deeply held cultural values and increase cross-cultural understanding (Scarcella & Oxford, 1992, as cited in Oxford, 1993). Thus, in the study of Carrell, Pharis, and Liberto (1989, as cited in Oxford, 1993) on metacognitive strategy training for reading in ESL, one of the major findings is that the effectiveness of the strategy training is directly related to differences in the learning styles of the students. The authors cite Schmeck (1988), who suggested that "learning strategies training and research programs should routinely include individual difference measures . . . to study and take advantage of interactions between personal attributes and the treatments used in training" (p. 171). In the study, the Inventory of Learning Processes (ILP), constructed by Schmeck, Ribich, and Ramanaiah (1977, as cited in Carrell, Pharis, and Liberto, 1989), was used to measure subjects' learning styles. The results of Carrell, Pharis, and Liberto (1989) study show that there are significant interactions between students' learning styles and the effectiveness of training in different strategies. Overall, the study suggests that second language reading instruction, especially for adult students in academic ESL programs, should benefit from the inclusion of explicit strategy training and such training should be varied to accommodate individual students' differing learning styles.

The teaching literature is often concerned with the fact that ESL students, having quite different language, cultural and educational backgrounds are often brought together in English language programs, where they are taught homogeneously by teachers who are very little aware of learning style differences. What is more, methods and materials used by ESL instructors are typically developed with the learning needs of native speakers of English in mind.

Very important in this respect is the study of Reid (1987), which was designed to identify perceptual learning style preferences of NNSs and to provide insights for the ESL classroom. During the study a self-reporting questionnaire was administered to 1,388 students to identify their perceptual and social learning styles. The questionnaire was designed to find the relationship of learning style preferences to such variables as language background, major field of study, level of education, TOEFL score, age, sex, length of time in the United States, and length of time studying in the U.S. The subjects were 1,234 ESL students and 154 native-speaking students. The faculty and students of 43 university intensive English language programs volunteered to participate to study. Respondents represented 98 countries, 29 major fields of study, and 52 language backgrounds. The instrument of the survey, a self-reporting questionnaire, consisted 5 statements on each of the six learning styles: visual, auditory, kinesthetic, tactile, group and individual learning. Learning style preferences were classified as major, minor, and negative.

In general, the results of this study show that students strongly prefer kinesthetic and tactile learning styles. According to Reid (1987), a minor preference for visual learning by native speakers of English contrasts with previous learning style research, much of which suggested that "mainstream culture emphasizes visual learning through the written word." Every language background, including English, gave group work a minor or a negative preference. The older the student, the higher is the preference for visual, auditory, kinesthetic,

and tactile learning. Preferences of ESL students with higher TOEFL scores and longer periods of stay in the United States are closer to those of native speakers of English.

As a solution to the problem of mismatch between teaching and learning styles, Reid (1987) suggests that the education of teachers includes the possible impact of teaching and learning styles and the development a "culture-sensitive pedagogy". To adapt, identify and modify learning styles, and turn unconscious or subconscious processes into conscious ones, students should be exposed to the concept of learning styles. Reid (1987) mentions that studies done with native speakers of English strongly suggest that the ability of students to use multiple learning styles results in greater classroom success. Therefore instructors should help students identify and assess, as well as diversify their individual learning styles. At the same time Reid (1987) warns against misuse of learning style assessment, noting that learning style preferences of students cannot be the only basis for designing instruction, and prescriptions based on diagnosis must be tentative, varied, monitored, and verified. As possible directions for future research, Reid proposes that the study be replicated in a different environment, or that researchers find out if learning styles change as students adjust to academic classes, or if students from some cultures or some major fields of study adjust more easily.

In a later article, Reid (1996) describes in retrospect her experience with formulating and norming the questionnaire designed for the above research. It discloses problems connected with the reliability and validity in survey design. This was done to help novice researchers avoid the typical pitfalls connected with this. For Reid (1987), the primary purpose for developing a new questionnaire was the realization of the fact that all available learning style instruments were normed on native speaking students, and thus cannot be really reliable or valid for ESL students. Such a discrepancy may be explained by the different

language and cultural backgrounds of students in ESL settings, or because of students' attitudes toward and experiences (or lack of experiences) with self-reporting surveys.

An important question in the learning style research is whether 'cultural learning style' exists. Nelson (cited in Reid, 1995) answers the question by pointing out that individuals are not born with a genetic inclination to learn, say, visually or kinesthetically – they 'learn how to learn' through various socialization processes. And, as it was put by Singleton (as quoted by Nelson in Reid, 1995, p. 6): 'There are, in every society, unstated assumptions about people and how they learn, which act as a set of self-fulfilling prophecies that invisibly guide whatever educational processes may occur there'. Therefore, it is a common concern of learning style theorists that the result of the current interest in cultural differences in learning style will be an abandoning of the ethnocentric point of view that others learn as we do.

Many of the studies in learning styles have been conducted among native English speaking students (Cavanaugh, 1981; Hodges, 1982; Stewart, 1981, as cited in Reid, 1987) and with ESL students in the USA (Ballinger & Ballinger, 1982; Birckbichler & Omaggio, 1978; Genesee & Hamayan, 1980; Hansen & Stansfield, 1981, 1982; Hosenfeld, 1979; Ramirez, 1986; Wong Fillmore, 1976, as cited in Reid, 1987).

Reid (1987) cites a research on cultural differences in learning styles done by Click, which showed, for example, that in developed and underdeveloped countries people react to visual prompts quite differently.

Lesser, Fifer, and Clark (1965, as mentioned in Reid, 1987) proved that the pattern of mental abilities (e.g., visual, spatial, abstract, and numerical) of middle-class and lower class Chinese children differed from that of middle-class and lower class Jewish children.

Reid (1987) refers also to the research by Ramirez and Price-Williams (1974) and Gonzales and Roll (1985) that have questioned the validity of standardized intelligence tests

on the basis of cross-cultural differences in cognitive style. The same source brings up the research by Witkin (1976) that has shown differences in the global and abstract functioning in different cultures: Different modes of thinking are characteristic of different cultures. Reid (1987, p.88) concludes that if "learners outside the mainstream of American culture exhibit unique learning style characteristics, then ESL students may use most of their time and effort trying to adjust to their new learning situations. Therefore, identifying the learning style preferences of nonnative speakers may have wide-ranging implications in the areas of curriculum design, materials development, student orientation, and teacher training".

A common theme in the entire learning style literature is that in a really student-oriented classroom students have to be given every opportunity to develop their individual learning styles to face the demands that are imposed by school and society with confidence and competence. The first step to this end should be assessing the style preferences of the students and the extent to which these preferences are considered in the classroom.

1.3. Review of the Literature on Learning Strategies

Language learning strategies (LLS) have been the subject of research since the mid-1970s, though they have been extensively used by language learners for hundreds of years. The earliest works on learning strategies were concerned with the identification of the strategies used by effective language learners. Rubin (1975) identified a set of widely-recognized strategies used by successful learners. She based these strategies of good learning on three variables: aptitude, motivation, and opportunity. She assumes that by finding out what good language learners do, teachers can help less successful learners improve their performance. The results of her study demonstrated that a "good language learner a) is a willing and accurate guesser, b) is strongly driven by communication, c) is not afraid of making mistakes or appearing foolish, d) practices a lot, e) monitors his own speech as well

as that of other people, and f) attends to meaning, i.e. to grammar, speech acts, context and the relationship among participants" (Rubin, 1975; p.45-48). Based on the data collected mostly in the form of interviews and diaries, Rubin (1981, as cited in O'Malley and Chamot, 1990, p.6) divided the learning strategies into two primary categories and a number of secondary subgroups. The first primary category included strategies that directly affect learning, such as clarification/verification, monitoring, memorization, guessing/inductive reasoning, deductive reasoning, and practice. The second primary category included strategies that indirectly contributed to learning, such as creating practice opportunities and using production tricks such as communication strategies.

Naiman et al. (1978, as cited in O'Malley and Chamot, 1990) proposed an alternative classification of learning strategies. The researchers based this classification on the strategies found by Stern (1975, as cited in O'Malley and Chamot, 1990) who had identified the characteristics of good language learners and a set of strategic techniques associated with them. Naiman et al. divided the learning strategies into five primary categories that were characteristic of all good learners, such as, a) active task approach, b) realization of language as a system, c) realization of language as a means of communication and interaction, d) management of affective demands, and e) monitoring L2 performance, and a set of secondary strategies that were characteristic only of some of the good learners. The language areas and skills associated with the strategies were sound acquisition, grammar, vocabulary, listening comprehension, learning to talk, learning to write, and learning to read.

Overall, according to O'Malley and Chamot (1990), these early studies were descriptive and were not grounded in a particular theory of second language acquisition or cognition, and it was extremely difficult to identify the strategies and techniques that are fundamental for language learning, or the strategies that are most useful and can be applied to all learners.

The first theory-based efforts in identifying the influence of cognition in second language acquisition were made in two general areas: to describe language proficiency or language competence, and to explain important influences on second language acquisition. In the first area, namely in identifying the strategies and techniques that were fundamental for language learning, the first attempts were done by Cummins (1984, as cited in O'Malley and Chamot, 1990) and Tikunoff (1985, as cited in O'Malley and Chamot, 1990) who viewed language proficiency in terms of task difficulty and the context of the language use. They found that academic tasks were cognitively demanding and needed language with reduced contextualized cues to meaning, while tasks outside the classroom were not cognitively demanding and needed language with rich contextualized cues. However, the researchers did not investigate the possible role of strategic cognitive processes in task performance.

Canale and Swain (1980, as cited in O'Malley and Chamot, 1990) developed a model of language competence that included cognitive components and strategic competence. Nevertheless, the role of language strategies was unclear. They considered communicative competence in terms of three key components: grammatical competence that included vocabulary, pronunciation, grammatical structures and word forms, sociolinguistic competence that included sociocultural rules and discourse rules for appropriate and coherent language use, and strategic competence that included verbal and non-verbal communication strategies used to fill the communication gaps resulted by insufficient competence. Although the researchers included strategic competence in this theoretical framework, their definition of strategic competence corresponded to communication strategies rather than learning strategies. That is to say, in the second language acquisition (L2) research there are two types of strategies: communication and learning, which differ in terms of their definition and intent, namely, learning strategies aim to improve learning, while communication strategies are for continuing communication (O'Malley and Chamot, 1990, p.9).

Theorists involved in the second area of research concerned with the identification of the important influences on the second language acquisition viewed cognitive and strategic processing in considerably different ways. A valuable study that contributed to this area of research was done by Bialystok (1978, as cited in O' Malley and Chamot, 1990) who identified four categories of learning strategies in her model of second language learning: inferencing, monitoring, formal practicing, and functional practicing. She discussed the role of learning strategies in relation to three types of knowledge: explicit linguistic knowledge, implicit linguistic knowledge, and knowledge of the world. She suggested that in any strategy use there is an overlap between these knowledge types, since they are interrelated and essential to one another. For example, inferencing is closely connected with implicit linguistic knowledge and knowledge of the world, whereas monitoring, formal practicing (for example, different grammar drills), and functional practicing (for example, making a request) deal with both explicit and implicit linguistic knowledge. Consequently, explicitly introduced strategies in a formal setting can contribute to implicit linguistic knowledge and consequently, to a learner's ability to understand and produce unprompted language.

In spite of the usefulness of this study, it was still uncertain how strategies were involved in the learning process in terms of empirical and theoretical considerations. Hence, seeking to find clarification to this question, Chamot and O'Malley (1986/1987, as cited in O'Malley and Chamot, 1990) developed an approach, namely Cognitive Academic language Learning (CALLA) based on the cognitive theory proposed by John Anderson. This framework describes how learning occurs and asserts that language learning is an active process in which learners deal with the information in different ways, that is, they choose the information they need, manipulate the information to store it in their memory, and to retrieve when necessary. According to this cognitive theory, there are two types of knowledge: declarative and procedural. Declarative knowledge is "what" we know or can declare, while

procedural knowledge is “how” we do things (O’Malley and Chamot, 1990). As a rule, when learning something new we use declarative knowledge, i.e. we link the new information to what we already know about it. However, this information does not always become “proceduralized” or automatic. Only by means of meaningful practice can we acquire procedural knowledge, namely retrieve from memory the information we need while performing a task. With regard to learning strategies, cognitive theory views them as cognitive skills, which also go through all the stages of the learning process. That is, they begin as declarative knowledge and end up as procedural knowledge. However, language learning strategy research has shown that even though most learners are aware of the learning strategies, they do not always “proceduralize” them. Only better learners can use appropriate strategies automatically and with minimal errors while performing a specific task.

O’Malley and Chamot (1990) classify the learning strategies within Anderson’s cognitive theory. They divide learning strategies into three broad categories, taking into consideration both theory and the observation reported by learners. These categories are as follows:

- Metacognitive Strategies- planning for learning, monitoring one’s own comprehension and production, and evaluating how well one has achieved a learning objective;
- Cognitive Strategies- manipulating the material to be learned mentally (as in making images or elaborating) or physically (as in grouping items to be learned or taking notes); and
- Social/ Affective Strategies- either interacting with another person in order to assist learning, as in cooperative learning and asking questions for clarification, or using affective control to assist learning tasks.

Cognitive Strategies are directly involved in the learning process; therefore their application is limited to specific tasks. In other words, cognitive strategies deal with declarative knowledge. Metacognitive strategies are indirectly involved in the learning process, because they plan, monitor, and evaluate the learning process. Therefore, they can be employed while performing a wide range of tasks. Metacognitive strategies deal with procedural knowledge, and their mastery leads to success in the learning process. As for social/affective strategies, they are rather different from cognitive and metacognitive strategies. They can be involved directly, for example in asking for clarification, or indirectly, for example self-talk, employed for reducing one's anxiety. However, this strategy group is of utmost importance because "learning is so heavily involved in cooperation and asking questions for clarification" (O'Malley and Chamot, 1990,p.61).

Another comprehensive framework of language learning strategies was developed by Oxford (1990), who claims that language learning strategies are essential in language learning and their appropriate use results in more successful learning. What is more, learners are aware of the power of learning strategies while learning a language. Oxford divides strategies into two major classes: direct and indirect. Direct strategies are those that are directly involved in the process of language learning. All direct strategies require mental processing but in different ways, such as guessing intelligently and creating mental linkages. As for indirect strategies, they are indirectly involved in the learning process. They coordinate the learning process, such as planning, self-monitoring or regulating emotions. These classes are further divided into six groups all together. Direct strategies are subdivided into memory, cognitive and compensation strategies, while indirect strategies are subdivided into metacognitive, affective and social strategies. Memory strategies help learners build new knowledge on the previous one with no demand of deep understanding, for example, memorization of new vocabulary or body movement. Cognitive strategies help learners

directly manipulate the target language, for example through reasoning, note-taking or summarizing. Compensation strategies help learners fill the missing knowledge gap, for example with the help of synonyms or guessing vocabulary from the context. Metacognitive strategies are used for coordinating the learning process, for example, via planning and organizing the language material or evaluating a task's success. Affective strategies deal with emotions; for example, by means of laughter or talking about feelings learners can reduce their anxiety level. Social strategies help learners cooperate with one another to clarify or verify confusing points.

Oxford (1990) claims that all these strategy groups support each other and can be connected with each other. She illustrates this interaction by means of analogy with a stage play where the direct strategy group acts as the Performer, and the indirect strategy group - as the Director. The director organizes, guides, and encourages the performers as well as makes sure that the Performer works cooperatively with other actors. This analogy vividly illustrates how learning strategies operate in the learning process. Oxford's division of strategies is very detailed and comprehensive. Moreover, this system of learning strategies has a lot in common with O'Malley and Chamot's (1990) categorization of learning strategies, making it easy to apply in an EFL classroom.

In research literature, language learning strategies have been defined in different ways. Wenden and Rubin (1987, as cited in Oxford, 1996) and O' Malley and Chamot (1990) claim that strategies are tools for active, self-directed involvement that is necessary for developing communicative ability. Oxford (1990) defines learning strategies as "specific behaviors or thought processes that students use to enhance their own learning". Ellis (1997) defines learning strategies as particular approaches or techniques that learners use when learning an L2, which are typically problem-oriented, i.e. learners use them when they have difficulty in learning the language material. According to Ellis (1997), learning strategies are

characterized as behavioral (for example, repetition) or mental (for example, guessing vocabulary in a context).

Oxford (1990) identifies a set of features of language strategies that contribute to better learning. She asserts that language strategies “contribute to the main goal, communicative competence, allow learners to become more self-directed, expand the role of teachers, are problem-oriented, are specific actions taken by the learner, involve many aspects of the learner, not just the cognitive, support learning both directly and indirectly, are not always observable, are often conscious, can be taught, are flexible, and are influenced by a variety of factors” (Oxford, 1990, p.9). According to her, language learning strategies help learners participate in authentic communication, thus, in this way contributing to the development of communicative competence. With the help of learning strategies learners gradually learn to do without a teacher, i. e., they become more self- directed. On the other hand, due to learning strategies, teachers get more varied roles, i.e., now they instruct, direct, judge, lead, evaluate and control. As for the problem orientation aspect of learning strategies, learners use them when there is a need to solve a problem or attain a goal. All the strategies are action based, because they are specific actions, such as note taking or planning, taken by learners in the learning process.

Learning strategies are not merely cognitive, because they involve other aspects, such as metacognitive (planning, evaluating), social (cooperating with each other) and emotional (affective). Learning strategies support learning directly and indirectly, because strategies of direct strategy group deal with the language (for example, memorizing a new word), while strategies of the indirect group are involved indirectly but more powerfully in the learning process (for example, planning and evaluating). The use of learning strategies may entail different levels of consciousness. As a rule, at the initial stage strategies are highly conscious actions, which require low consciousness when used automatically (Oxford, 1990, p.12).

Learning strategies can be easily taught through strategy training, which in its turn can assist learners to become more conscious and skillful in choosing appropriate strategies to use. Language learning strategies are flexible, because there are few or no precise patterns of using them due to various factors influencing learners' strategy choice. These factors include "degree of awareness, stage of learning, task requirements, teacher expectations, age, sex, nationality, ethnicity, general learning style, personality traits, motivation level, and purpose for learning the language" (Oxford, 1990, p.13). Oxford (1990) illustrates each feature by mentioning some strategies or strategy groups. For example, she states that such strategies as analyzing, one of the cognitive strategies, and the keyword technique, one of the memory strategies, are crucial for understanding and recalling new information, whereas compensation strategies help to develop communicative competence.

However, Oxford (1990) claims that out of context these essential features of learning strategies are neutral having neither positive nor negative influence on the learning process, and they can be activated with a positive influence, only if the following conditions are present: a) there is a good relation between L2 task and the strategy use, b) the strategy fits the learner's learning style preference, and c) the learner effectively uses a set of relevant strategies.

The features identified by Oxford and discussed above demonstrate how valuable learning strategies are in the learning process as well as how useful their influence can be when necessary conditions are met. Hence, there are a number of good reasons why strategy instruction, which is "an essential part of language education" (Oxford, 1990, p.12), is recommended.

A number of researchers (Derry and Murphy, 1986; Pearson and Dole, 1987; Graham, 1987, as cited in Oxford, 1996) conducted studies on learning strategy training in various areas of the curriculum, such as reading, writing, vocabulary, discourse analysis and listening

comprehension, and they found that there are many good reasons for teaching learning strategies. Moreover, there are different ways of teaching them; that is, LLS instruction can be separate versus integrated, direct versus embedded or explicit versus implicit.

The first good reason for learning strategy instruction is that good evidence exists to show that learning strategies are “teachable”. For a long time strategies were considered “unteachable” and many researchers (Rubin, 1975; Stern, 1975; Naiman et al., 1978, cited in Oxford, 1996) were concerned with in-born characteristics, namely the endowment of the good language learner than with teaching all learners to be good ones. However, a few years later other researchers (Crookall, 1983; Oxford, 1990b, 1993b; Rogers, 1978; Wenden and Rubin, 1987, cited in Oxford, 1996) argued the case for strategy instruction. Oxford (1996) came up with some extremely important findings that strategy instruction contributed to increased motivation, improved language performance, and resulted in greater autonomy and self-reliance, and ability to continue learning after classroom instruction. However, Nyikos (1991, as cited in Oxford, 1996) found that true primarily for effective learners, since research demonstrated that more successful language learners are apt to use more strategies and apply them more properly than less successful learners.

Oxford (1996, p. 227) suggests another good reason for learning strategy instruction, namely “*strategy instruction helps students become more self-directed, autonomous and effective learners through the improved use of language learning strategies*”. These characteristics are extremely important for the learners, as successful learning depends to a great extent on the learner, not on the teacher. For the learner there are a number of factors that determine the success in the learning process: Among them are learner’s motivation, attitudes, organizational abilities and personality factors. Strategy instruction will help learners to know more about themselves and apply a set of strategies that work best for them. Moreover, Oxford (1996) highly recommends that a wide range of strategies be introduced to

the learners to enable them to sort and organize their own strategy use according to the psychological factors mentioned above, by trying out and experimenting with different strategies offered by the instruction, since not all effective strategies seem to fit every language learner.

Human beings may learn consciously, subconsciously or unconsciously. Strategy instruction involves primarily conscious learning; though sometimes it can also entail subconscious or unconscious learning as in case of “blind” strategy instruction. Schmidt (1994, as cited in Oxford, 1996) defined consciousness as a crucial factor in the learning process. What is more, he states that consciousness is a crucial contrast in strategy instruction. He divides consciousness into four aspects: awareness, attention, intentionality and control.

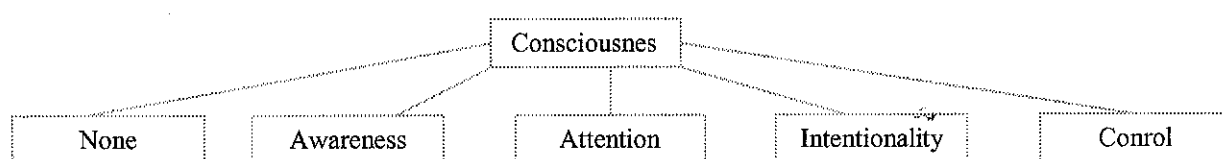


Figure 1: *Consciousness contrasts.* (Source: Oxford, 1996.)

These levels of consciousness follow each other in the process of learning to use strategies, but not all learners follow the pattern in the same way. Furthermore, not all learners are aware that they go through this process while learning. Oxford (1996) states that levels of consciousness are directly related to strategy instruction. Wenden and Rubin (1987, cited in Oxford, 1996) claim that explicit LLS training is very helpful to make learners act consciously, since it includes all levels of consciousness, unlike “blind” strategy training which requires no raising of learner consciousness about strategies. Oxford (1996) states that explicit strategy instruction consciously involves the learners in the learning process. Thus, it raises their *awareness*, i. e. they think and analyze each step of completing the task. Now the learners begin to think of the strategies that will be helpful for them while completing a

similar task. The third level of the explicit strategy instruction gets the learners to pay *attention* to their own strategies as well as the strategies used by other learners. When succeeding in this, strategy instruction helps the learners *intentionally* improve their own strategy use. Now the learners are ready to *control* their strategy use. However, the level of consciousness varies among learners. While some of them might be raising their strategic awareness, others can go farther into control.

With regard to approaches to learning strategy training, different instructional approaches were suggested (O'Malley et al. 1985b, described in Oxford, 1990b; Wenden, 1986; Chamot and O' Malley, 1987; Jones, 1983, as cited in Oxford, 1996). They argue different approaches to teaching learning strategies. As a result, the following instructional approaches have been identified: separate versus integrated, direct versus embedded or explicit versus implicit.

The proponents of separate or detached instruction Derry and Murphy (1986, as cited in Oxford, 1996) and Jones et al. (1987, cited in Oxford, 1996) argue that separate strategy instruction shows that strategies can be applied in various contexts, i.e. strategies are generalizable to many contexts. Therefore, learners' attention should be focused only on learning and developing strategic skills rather than trying to learn the language content at the same time.

On the one hand, those who favor an integrated approach to LLS instruction argue that learning in context, is much more effective than learning a separate skill. In her research, Wenden (1986, in Oxford, 1996) states that the detached strategy instruction can fail unless the learners find it relevant to their everyday language learning. Oxford (1996) cites Chamot and O' Malley (1987), Wenden (1987) and Campione and Armbruster (1985) who claim that practicing strategies on authentic language tasks facilitates the learners' process of apply the

same strategies while doing similar tasks in other classes. Discussions and games are extremely effective in this respect.

The arguments for separate and integrated LLS instructions are similar to the questions about whether the instruction should be direct (explicit) or embedded (implicit). The supporters of *direct* or *explicit* instruction (Palincsar and Brown 1984; Brown et al. 1986; Wenden 1997b; Weinstein and Mayer 1986; Winograd and Hare 1988, as cited in O' Malley and Chamot, 1990) suggest that learners should be informed of the purpose and importance of the strategy training and they should be instructed how to regulate and control learning strategies.

In *embedded* or *implicit* LLS training the students are involved in activities that aim to elicit the use of the strategies being taught. The students are not informed of the purpose why they practice this approach to learning. This form of instruction is known as "blind " strategy instruction, which, as has already been mentioned, requires no learner consciousness of strategies, because the tasks and materials cause the learners "subconsciously" or "unconsciously" to use particular learning strategies (Oxford, 1996). Thus, the majority of students might not be aware of the hidden strategies when performing a task, nor will they try to use them regularly in doing other similar tasks. Wenden (1987b, cited in Oxford, 1996) criticized this approach for the reasons that learners do not develop independent learning strategies and fail to become autonomous learners, since they are unaware of the strategies they use. On the other hand, Jones (1983, cited in Oxford, 1996) finds that this approach has an advantage since little teacher training is required as opposed to direct instruction, which requires teacher training before the implementation of the program.

In strategy instruction, especially in explicit instruction, the teacher's role is of great significance. Teachers should be aware of the factors that can help them deal with the implementation of strategy training.

Nyikos (1991, as cited in Oxford, 1996) claims that a conceptual shift toward a learner-centered classroom is necessary. Teachers should be able to make this conceptual shift first to understand the learning process through learners' eyes and only then to help strategy development among learners. In a study, the aim of which was to find out how teachers foster the process of helping students learn *how* to learn Nyikos classified teachers as *assimilators*, *middle-grounders*, and *resisters*. Assimilators are ready for making the shift and do it easily, middle-grounders are willing to make the shift but they let the learners elicit the strategy use themselves, whereas the resisters make no attempt to teach LLS, let alone help students develop strategic awareness.

In the same study, Nyikos (1991, cited in Oxford, 1996) also pointed out the importance of the teacher's readiness to become a novice in strategy teaching despite the slow-down in teaching fluency. Strategy instruction- no matter how basic and common-sensical it might seem to experts- is indeed novel to many teachers.

O' Malley and Chamot (1990) cite Chamot et al. (1987), O' Malley et al. (1987) whose studies convincingly demonstrated that teachers' interest and willingness to commit additional time to the instruction and the ability to keep their students motivated are crucial to the success of learning strategy instruction. Teacher training in strategy instruction might be a challenge, i.e. it is neither simple nor successful, since not all teachers are willing to be engaged in this process for a number of reasons: sometimes they are not ready to be novices, and sometimes they doubt the usefulness of the strategy instruction and consider it a waste of time. In their teacher training efforts, O' Malley and Chamot (1990) discovered that teachers first needed to learn about the concept of learning strategies, and think about their own learning process when being a learner. Moreover, teachers should teach LLS only when they feel comfortable with incorporating strategy training in their classroom.

Oxford (2002) also points out that the teacher's role is of great importance in strategy instruction. She suggests that ESL/EFL teachers engage their students in the conscious use of language learning strategies to make the learning process easier and more effective, and they should make strategy training a regular classroom event in an explicit way. As strategy training can help the students to effectively use multiple strategies ranging from cognitive to social ones, the teacher should introduce a wide variety of strategies instead of only one or two of them.

Oxford (1990) makes another important claim concerning the effectiveness of strategy instruction: she suggests that the strategy training be conducted in two steps: strategy assessment (identifying strategies employed by the learners) and strategy training (actually conducting the training). She suggests the following instruments for assessing learning strategies: observations, interviews and think-aloud procedures, note-taking, diaries and journals, self-report surveys and questionnaires. Oxford (1990, as cited in Celce-Murcia, 2001) and Cohen and Scott (1996, cited in Celce-Murcia, 2001) analyzed all these assessment tools and identified advantages and disadvantages of each of them. In spite of some identified disadvantages (for example, structured questions), the most widely used assessment tool is Oxford's questionnaire, Strategy Inventory for Language Learning (SILL), which has been translated into 20 languages and used in a number of published studies around the world (Oxford, 1990, as cited in Celce-Murcia, 2001).

After assessing the strategies, Oxford (1990) recommends the actual strategy training. She identifies three types of training: (a) awareness training that introduces the concept of learning strategies to learners, without involving them in using strategies in actual language tasks; (b) one-time strategy training that informs the learners of the value of the strategies, when and how to use as well as how to evaluate the success of the strategy, involving learners in using one or more strategies while completing actual language tasks; (c) long-term strategy

training that again teaches learners when and how to use as well as how to evaluate and control strategies, involving learners in strategy use while completing a number of actual language tasks for a long period of time. This type of strategy training is considered to be the most effective by Oxford (1990).

Lessard-Clouston (1997) claims that teachers should study their teaching context before implementing language learning strategy training. That is, it is crucial for teachers to know such things about their students and their interests, motivations, learning styles, etc. Teachers can use classroom observation to see what learning strategies their students are already using or they can use questionnaires to find the learning style preferences, and finally they can conduct informal discussion to see the type or types of motivation that drives them to learn the foreign language. After studying the context, teachers should focus only on the learning strategies that are relevant to their students and materials as well as their teaching styles. Furthermore, teachers should provide the students with clear examples, modeling how the strategies work while performing a task. The final step of teaching learning strategies is to reflect and encourage learner reflection. That is, the teacher should discuss the effectiveness of the lesson and the role of learning strategies and their training in the classroom, and do this together with the students.

Though research on learning strategy training with foreign language students is recent and a lot of questions still remain unanswered, potentially significant implications can be drawn from the recent strategy training research for all ESL/EFL teachers, and for Armenian EFL teachers in particular, who want to improve their teaching effectiveness. The implications can be drawn from the literature for learning strategy teaching as well as from unpublished research papers and an MA thesis concerning Armenian learners' LLS use and preferences.

In 1999 the students of the Teaching English as a Foreign Language (TEFL) Certificate at the American University of Armenia (AUA) wrote a paper "My Own Strategy Use", in which the students described their own strategy use while learning English. The papers revealed that all the students began with using direct strategies that gradually turned into indirect ones. This change in strategy use was due to the fact that students' strategy use depended on their current proficiency level of the target language. Moreover, they noticed the change in their strategy use while progressing in the learning process. These findings were very useful, since the students who wrote these papers used to be learners themselves. It is worth mentioning that these students are English teachers who implement strategy training in their classes by looking at the issue both from the learner's perspective and the teacher's one.

Another source of information about Armenian learners' strategy use is the unpublished MA thesis "Student Self-Assessment and Strategy Use as a Means of Promoting Students' Autonomous Learning" (Gasparyan and Harutyunyan, 2001). The authors, two Intensive English Program (IEP) instructors conducted a research study with 68 IEP students to find a correlation between AUA students' self-assessment and strategy use. By means of the *Strategy Inventory for Language Learners (SILL)* Gasparyan and Harutyunyan (2001) found that almost all the students (66 students) set goals for themselves and took responsibility for organizing their studies. The majority (62) of the students were aware of the language areas they needed to work on. Overall, the study showed that the students are aware of the language learning strategies and use them in the language learning process.

1.4. Rationale

The educational system in Armenia continues to follow mainly Soviet traditions in language teaching, i.e. most classrooms are strongly teacher-centered, although there are schools that have started to apply innovative methods, making classrooms more learner-

centered. This trend toward learner-centeredness makes it imperative to take into account learners' personality as an important factor in language learning, which was totally neglected during the Soviet times. Studies investigating the influence of learning styles and strategies on learners' language proficiency have demonstrated convincing evidence that learners can become better users of language learning strategies and improve their language performance, when they are aware of their individual style (Oxford, 1996).

Ely and Pease-Alvarez (cited in Oxford, 1996) claim that the goals of learning styles and strategies are mutually essential, i.e., the identification of learning styles shows students that they are unique as language learners, while learning strategies help students find ways how to use their language learning ability to the fullest. They also claim that these goals are complementary, because "if learners don't take full advantage of their learning styles through appropriate strategies, then this self-knowledge is wasted" (Ely and Pease-Alvarez, cited in Oxford, 1996, p. 5).

The research on learning strategies has convincingly shown that there are a number of factors that affect learners' strategy choice, such as culture, learning styles, gender, age and others. The EFL research has resulted in strong claims that there is a direct relationship between culture, learning styles and strategy preference. For example, Harshbarger et al. (1986, as cited in Oxford, 1996) and Willing (1988, cited in Oxford, 1996) found that extroverted learning styles, such as those of many Hispanics and Arabic speakers, are related to the use of social strategies for learning, whereas many introverted Asian students use strategies for working alone. Furthermore, due to the influence of culture an overall learning style is developed, which contributes to the specific choice of language learning strategies (Oxford, 1990). It has also been convincingly shown in research that culture influences strategy instruction; learners in one culture may prefer improving their strategies

independently, whereas learners in another culture like the teacher to instruct them in ways to improve their strategy use (Oxford, 1996).

The readings we have done on language learning styles (e.g. Oxford) and strategies (Oxford, Chamot and O'Malley, Ellis) as well as the fact that no large-scale research has been done in this field with Armenian learners convinced us of the need for conducting a study the effect of which could encourage a shift in foreign language teaching and learning in Armenia towards learner-centeredness, where a great deal of attention will be paid to the learner as a personality with his individual learning style and strategy preference.

Thus, we designed a study the intent of which was to identify the learning style or styles typical of Armenian learners as well as to investigate the possible relationship between the learners strategy use and their individual learning style preference. That is to say, it would be worth studying whether Armenian learners share common learning styles, and if yes, how these learning styles affect their language learning strategy preference. Consequently, our study focused on the following questions:

- 1) Is there at least one learning style that is commonly used by Armenian university students?
- 2) What effect, if any, do the learners' individual learning style preferences have on their choice of learning strategies?
- 3) Is there a pattern for an overall learning style and strategy use that is shared by most Armenian university learners?

Based on these questions, a number of research hypotheses were developed and are discussed in detail in Chapter 3:

- 1) In this culture learners share at least one overall learning style.
- 2) There are significant differences between the uses of at least two strategy groups.

3) Learners' strategy choice is directly dependent on their individual learning style. That is to say, each learning style entails a pattern of strategy use.

Variables operationalized in this study are:

- Dependent 1 – learners' learning style,
- Independent 1 – learners' nationality or ethnicity;
- Dependent 2 – learners' language learning strategy use;
- Independent 2 – learners' individual learning style;
- Control – nationality and academic program of learners.

CHAPTER 2: METHOD

This is a statistical survey study that involved the subjects, materials and procedure discussed below. This primary research approach was chosen, since surveys “can provide important information on individuals and groups that is not available in other types of research. Moreover, they are (1) systematically structured with definite procedural rules, (2) based on a step-by-step logical pattern, (3) based on tangible, quantifiable information, called data, (4) replicable in that it should be possible to do them again, (5) reductive in that they can help form patterns in the seemingly confusion of facts that surround us” (Brown, 1988, p.5).

2.1. Subjects

The subjects of this research are 60 Armenian students of different academic programs at different higher educational institutions: 11 of the subjects are second-year journalism students of the “Galik” private university, 10 students are second-year Agribusiness students of the Armenian Agricultural Academy, 18 students are third-year economic department students of Yerevan State University, 14 students are from the Intensive English Program (IEP) of the American University of Armenia (AUA), the other seven are fourth-year graduate students of Yerevan State Architectural University.

The English proficiency level of the students varies from beginning to advanced: Galik students are beginners, Architectural – low intermediate, Agricultural - intermediate, Economic-upper intermediate, IEP – advanced. The language proficiency level of the students was determined by the institutions they attend, i.e. intermediate or advanced students are placed according to their English entrance examination results (economic, food technology), while beginners have little or no previous knowledge of English (Architectural and Galik students). In addition to completion of undergraduate English studies, IEP students

have also taken TOEFL examination, with the score range of 500-550 to enroll in the Program.

The subjects' first language is Armenian. Their age ranges between 17-34. As for the sex, 22 of the subjects are female and 38 of them are male.

In all the above-mentioned institutions the English language is taught as a part of the academic program. Most of the classrooms can be considered teacher-centered, with Agribusiness and AUA English classrooms being more learner-centered. It should be noted that the first three institutions lack technical equipment (tape-recorders, VCRs and computers) and English is taught only via textbooks, while the latter two institutions have all the necessary equipment to facilitate language learning. Moreover, the language of instruction at the latter two is English.

2.2. Materials

This research investigates the relationship between styles and strategies and its effect on language learning and uses the following instruments:

1. Style Analysis Survey (SAS), (see *Appendix I-a*)
2. Strategy Inventory for Language Learning (SILL), (see *Appendix II-a*)

"Style Analysis Survey" (Oxford, 1993) is a questionnaire that is designed to evaluate learners' general approach to learning and working and to identify their overall style preferences. The SAS consists of 110 statements grouped into five sections. This questionnaire identifies styles in terms of five activities, respectively subdivided into parts that reflect contrasting style types:

- use of physical senses (visual, auditory, hands-on);
- dealing with other people (extroverted, introverted);
- handling possibilities (intuitive, concrete sequential);
- approaching tasks (closure-oriented, open);

- dealing with ideas (global, analytic).

Each of the statements is to be graded on a four-level scale (from 0 to 3) to the extent they are close to respondents' perceptions. The larger scores represent styles preferred by the given respondent, but if two of the scores are within 2 points of each other, both styles are applicable.

"Strategy Inventory for Language Learning" Version for Speakers of Other Languages Learning English (Oxford, 1989) is a questionnaire that evaluates learners' strategy use as low, medium and high. It enables the teacher to use the students' SILL results to help them improve their strategies (Oxford, 1989). This questionnaire consists of 50 statements divided into six parts. Each part represents one strategy group defined by Oxford: memory, cognitive, compensation, metacognitive, affective and social. Respondents evaluate each statement with a score ranging from 1 to 5. The results show what strategy types are preferred by the students, i.e. the higher the score the more frequently the strategy is used.

2.3. Procedure

In order to ensure as wide as possible a representation of Armenian English students in the research, the data were collected in five different higher educational institutions from students of different language knowledge levels.

The data were collected in the period from late November to early December. That was the end of the semester in all the institutions involved. This was done on purpose, since after doing an entire semester of English classes, the students had fresh memories of their language learning practices.

Before distributing the questionnaires, we explained to the students the purpose of the research and asked them to write their names on the consent form (see *Appendix III*) and sign it, if they agreed to participate in the study. However, the questionnaires were anonymous,

i.e. no names were indicated on them, so that the subjects felt more confident in sharing their personal information.

Upon giving their consents, each of the subjects received a separate folder containing a background questionnaire (see *Appendix IV*), the SILL and the SAS. In the background questionnaires they had to indicate their age, sex, language ability level and academic major. Each of the folders was coded by a letter, representing the group, and a figure, representing the student's number (e.g. A-1, B-2, C-5, D-4, E-3).

To avoid language comprehension problems, the first group, i.e. beginners at the Galik University, had the questionnaires in Armenian (see *Appendix I-b* and *Appendix II-b*). The other groups completed the original, i.e. the English versions of the questionnaires (see *Appendix I-a* and *Appendix II-a*), since the wording was not really complicated and fit the language proficiency level of the respondents.

In fact, the completion of each questionnaire requires half an hour, as suggested by Oxford. Since the typical class time in Armenian intuitions is eighty minutes, one class session was enough to complete both of the questionnaires on the same day.

After getting the folders, the subjects received brief instructions as to how to work with the questionnaires. As the questionnaires are designed in quite a simple way, the subjects had no problem completing them. However, while students were working, we stood by to clarify unknown words and expressions.

After finishing, the respondents handed in the folders.

CHAPTER 3: DATA ANALYSIS AND RESULTS

3.1 Identification of Learning Styles

The quantitative data obtained from the questionnaires were calculated and analyzed by stages. In the first stage we computed the questionnaire data gathered from the subjects (subjects were coded according to their institution, such as A-1, D-3, E-2) and arranged in a table that contained detailed information about the subjects, such as the learners' sex, age, major and language proficiency level (See *Appendix I*). Both the learning style - dependent variable and the ethnicity - independent variable were analyzed on the nominal scale to identify whether there was at least one or two learning styles typical of Armenian university learners. Since both scales were nominal, it was of utmost significance to choose the right statistical test to test the hypotheses as well as to establish validity and reliability of the study.

As each subject had been coded according to his/her institution, for example A-1, D-3, E-2, two separate tables were created for each institution: one for the learning styles, the other - for learning strategies, and each subject's questionnaire results were distributed in these tables (see *Appendix VI*).

In the next stage, the frequencies of the subjects' learning styles were computed by using the results of their completed SAS questionnaires, and distributed in a table consisting of 5 style groups (11 styles in total) identified by Oxford (1993) (see *Appendix VII*). To identify the learning style or styles shared by most Armenian learners, the following hypotheses were formulated:

- Null I: There is no statistically significant difference between the frequencies of the students' learning styles, i.e. $H_0: f_o = f_e$
- Alternative I: There is a statistically significant difference between frequencies of the students' learning style, i.e. $H_1: f_o \neq f_e$

After the formulation of the hypotheses it was extremely important to choose the right statistical test for hypothesis testing. The above-mentioned null and alternative hypotheses were tested via a *one-way chi-square* (χ^2) statistical test. This was done on the assumption that the “one-way chi-square is used to analyze data in studies in which there is one nominal variable with two, three or more levels” (Brown, 1988, p.194). We created the following contingency table and tallied the number of occurrences of each category (learning style).

Table 1: The Frequencies of Each Learning Style

Physical			Social		Handling Possibilities		Approaching Tasks		Dealing with Ideas	
Visual	Auditory	Hands-on	Extroverted	Introverted	Intuitive	Concrete sequential	Closure oriented	Open	Global	Analytic
31	35	32	51	20	44	33	53	14	55	21

Then we analyzed the data by applying the chi-square test (χ^2). In our calculations we had two frequencies – observed (f_o) and expected (f_e): the observed frequencies were based on the samples involved, while the expected frequencies theoretically represented the populations as a whole. The significance level was set at $p < .05$, with a confidence interval of 95%. The degree of freedom (ν) for our study was 10. This was based on the formula for the degree of freedom (ν) = $n-1 = 11-1 = 10$, where n was the number of categories (11 learning styles). Then we computed the observed frequencies for each cell by applying the following formula:

$$\chi^2_{\text{obs}} = \sum \frac{(f_o - f_e)^2}{f_e}$$

where Σ is the sum, f_o is the observed frequency and f_e is the expected frequency for each cell. The χ^2_{obs} was 134.3 and the χ^2_{crit} was 16.92 at $\alpha < .05$ and the degree of freedom (ν) = 9, and, since χ^2_{obs} was much larger than χ^2 ($134.4 > 16.92$), we rejected the null hypothesis and accepted the alternative hypothesis. This means that there was only a 5% probability that χ^2_{obs}

= 134.4 occurred by chance alone or a 95% confidence level that the observed relationship between frequencies was due to factors other than chance.

With χ^2_{obs} in hand we checked the assumptions underlying this statistical test:

1. Each observation is independent of all others.
2. Each observation falls in only one cell.
3. Observations are frequencies.
4. All the expected frequencies are higher than 10.

Since all the assumptions were met, there was no need to apply *Yates's correction for continuity*,

After rejecting the null hypothesis and accepting the alternative one, which claims that the observed frequencies are statistically significant and not by chance alone, we had to continue investigating which learning style was shared by most Armenian university learners. We formulated another pair of hypotheses, namely $H_0 \text{ II}$ and $H_1 \text{ II}$:

- Null II: There is no statistically set proportion (p) that reflects the commonly shared learning style of Armenian students, i.e. $H_0 \text{ II}: p \leq 0$
- Alternative II: There is a statistically set proportion (p) that reflects the commonly shared learning style of Armenian students, i.e. $H_1 \text{ II}: p \leq 1$

We created a new table (see *Appendix VIII*) with the number of tallied frequencies and calculated the proportions and percentages of learning styles. If the proportion (p) was equal or close to 1, we could claim that the given learning style was commonly shared, and it was due to factors, in our case nationality or ethnicity, other than chance. And vice versa, if it was close to 0, the learning style appeared to be commonly shared by chance alone.

The computation yielded the following results (see Table 3 below). The number of visual students was 31 out of 60, which makes 51.67% or $p = 0.52$, **auditory**: 35 out of 60, i.e. 58.33% or $p = 0.58$, **hands-on**: 32 out of 60, which makes 53.33% or $p = 0.6$,

extroverted: 51 out of 60, which makes 85.00% or $p = 0.9$, **introverted:** 20 out of 60, which makes 33.33% or $p = 0.3$, **intuitive:** 44 out of 60, which makes 73.33% or $p = 0.7$, **concrete sequential:** 33 out of 60, which makes 55.00% or $p = 0.6$, **closure- oriented:** 53 out of 60, which makes 88.33% or $p = 0.9$, **open –** 14 out of 60, which makes 23% or $p = 0.2$, and **analytic:** 21 out of 60, which makes 35.00 % or $p = 0.4$, **global:** 55 out of 60, which makes 91.67% or $p = 0.9$, and **analytic:** 21 out of 60, which makes 35.00 % or $p = 0.4$.

Table 2: *Learning Style Percentages and Proportions.*

STYLE	NUMBER	PERCENTAGE	PROPORTION
Ph (visual)	31	51.67%	0.5
Ph (auditory)	35	58.33%	0.6
Ph (hands-on)	32	53.33%	0.5
S (extroverted)	51	85.00%	0.9
S (introverted)	20	33.33%	0.3
P (intuitive)	44	73.33%	0.7
P (concrete sequential)	33	55.00%	0.6
T (closure oriented)	53	88.33%	0.9
T (open)	14	23.00%	0.2
I (global)	55	91.67%	0.9
I (analytic)	21	35.00%	0.4

Since the results obtained reflected the proportions or percentages of the sample population, it was necessary to estimate the unknown true proportion of the whole population on the basis of the sample population proportion, and to generalize the findings for the whole Armenian population of university students. Thus, to compute the true proportion of the population (p) on the basis of the sample proportion (p_s) we applied the following formulas with the confidence level set at 95%, and the α level set at 0.05 respectively:

$p \in (p_s - z_{\alpha/2} \sqrt{p_s (1 - p_s)/n}; p_s + z_{\alpha/2} \sqrt{p_s (1 - p_s)/n})$, which could be segmented into

Lower Limit (LL) = $p_s - z_{\alpha/2} \sqrt{p_s (1 - p_s)/n}$

Upper Limit (UL) = $p_s + z_{\alpha/2} \sqrt{p_s (1 - p_s)/n}$

$$\text{Error Margin (EM)} = z_{\alpha/2} \sqrt{p_s (1 - p_s) / n}$$

Where p is the unknown true population proportion, p_s is the sample proportion and estimator of the true proportion, and $z_{\alpha/2}$ is the z -score. Lower Limit (LL) shows the minimum percentage or proportion of the whole population that shows preference for the given learning style, and Upper Limit (UL) shows the maximum percentage of the whole population that prefers the given learning style respectively. The Error Margin (EM) shows the proportion or the percentage of error that could be made in the calculations. In other words, the true population proportion is a range from the lower limit to the upper limit with the set error margin. Consequently, the closer the sample population proportion to the true population proportion, the more accurate the findings of the research will be.

The results of the calculations of the unknown true population proportion were quite consistent with the sample population results (see *Appendix VIII*). **Visual** learners made up at least 39% and at most 64% with $EM = 0.7$, **auditory**: at least 46% and at most 70% with $EM = 0.12$, **hands-on**: at least 40% and at most 66% with $EM = 0.13$, **extroverted**: at least 76% and at most 94% with $EM = 0.09$, **introverted**: at least 21% and at most 45% with $EM = 0.12$, **intuitive**: at least 62% and at most 84% with $EM = 0.11$, **concrete sequential**: at least 42% and at most 68% with $EM = 0.13$, **closure- oriented**: at least 80% and at most 96% with $EM = 0.08$, **open**: at least 12% and at most 23% with $EM = 0.03$, **global**: at least 85% and at most 99% with $EM = 0.07$, and **analytic**: at least 23% and at most 47% with $EM = 0.12$. The error margins fluctuated among the learning styles. That is to say, the possibility of making an error in our calculations varied among the styles, ranging from 0.03 to 0.13 or from 3% to 13% respectively.

We ranked the obtained data in descending order (see *Appendix VIII*), i.e. from the largest proportion to the smallest one, to see which percentages or proportions were close to

1, i.e. which proportions were statistically significant and meaningful, and which were far from 1, i. e., which proportions were not statistically significant and meaningful respectively.

The results were as follows: the closest to 1 was **global** style ($p_s = 0.9$), the second closest was **closure-oriented** ($p_s = 0.9$) and the third was **extroverted** ($p_s = 0.9$), the next five fell in the middle of the continuum: **intuitive** - ($p_s = 0.7$), **auditory** ($p_s = 0.6$), **concrete sequential** ($p_s = 0.6$), **hands-on** ($p_s = 0.5$), **visual** ($p_s = 0.5$). As for the last three, they were the farthest from 1 - **analytic** ($p_s = 0.4$), **introverted** ($p_s = 0.3$) and **open** ($p_s = 0.2$) styles. The first three, namely **global**, **closure-oriented** and **extroverted**, being the closest to 1 ($p_s = 0.9$), can be assumed as commonly shared learning styles among Armenian university students ($0.9 \approx 1$). It cannot be strongly claimed that the next five styles, i.e. **intuitive**, **auditory**, **concrete sequential**, **hands-on** and **visual** are typical of Armenian learners. For the last three, i.e. **analytic**, **introverted** and **open**, we can positively claim that they are usually not shared by Armenian students.

3.2 The relationship between Learning Styles and Learning Strategies

After the identification of the learners' learning styles, the task was to investigate the relationship between the learning style and strategy use, i.e., to see whether there were patterns of strategy use in relation to each learning style as well as to explore whether the observed patterns were the same or different as compared with the strategy use of other learning styles. The relationship between the learners' learning styles (the independent variable) and the language learning strategy choice (the dependent variable) was investigated by means of mean comparisons. That is to say, the mean comparisons of the learners' learning strategy choice and their preferred learning style were computed by a one-way analysis of variance (one-way ANOVA) to see whether the relationship between the style and strategy preference was statistically significant or it was due to chance alone. The quantitative

data obtained from the SILL questionnaires were calculated and arranged in tables in accordance with each learning style, after which separate tables of the strategy means for each style were created (see *Appendix IX*). The learning style – the independent variable was analyzed on a nominal scale, while the learning strategy - dependent variable was analyzed on the interval scale. Since two scales, namely nominal and interval, were to be analyzed together, it was of utmost significance to choose the right statistical test for testing the hypothesis as well as for establishing the validity and the reliability of the study. The one-way ANOVA was chosen for testing the hypotheses, because as cited in Brown (1988, p. 176) “the striking advantage of the one-way analysis of variance is that it can be applied when there are more than two groups in the independent variable. So the means of three, four, or even more groups on a dependent variable can be tested simultaneously for significant differences”. The following two-tailed or non-directional hypotheses were formulated:

- Null hypothesis III: There is no statistically significant and meaningful relationship between the learners’ learning style and strategy choice. That is, the average values or means (μ) of language learning strategy use of visual learners is the same as those of auditory, hands-on, extroverted, introverted, intuitive, concrete sequential, closure-oriented, open, global and analytic learners.

$$H_0 \text{ III: } \mu_{\text{vis}} = \mu_{\text{aud}} = \mu_{\text{hand}} = \mu_{\text{exto}} = \mu_{\text{into}} = \mu_{\text{int}} = \mu_{\text{con-seq}} = \mu_{\text{cl-or}} = \mu_{\text{open}} = \mu_{\text{glob}} = \mu_{\text{anal}}$$

- Alternative hypothesis III: There is a statistically significant and meaningful relationship between the learners’ strategy choice. Thus, each learning style should entail a specific pattern of learning strategy use. That is to say, there are at least two learning styles the language learning strategy use means of which differ from each other.

$$H_1 \text{ III: } \mu_{\text{vis}} \neq \mu_{\text{aud}} \neq \mu_{\text{hand}} \neq \mu_{\text{exto}} \neq \mu_{\text{into}} \neq \mu_{\text{int}} \neq \mu_{\text{con-seq}} \neq \mu_{\text{cl-or}} \neq \mu_{\text{open}} \neq \mu_{\text{glob}} \neq \mu_{\text{anal}}$$

The significance level (α) was set at .05 ($\alpha < .05$), and the confidence level was 95 % respectively, which means that there is a 0.05 probability ($p < .05$) that the relationship between the learning strategies and learning styles are due to chance alone. Therefore, the results of the study could be 95% generalizable for the population.

For this purpose the means of strategy groups for each learning style were calculated (see *Appendix X*). Then, through the one-way ANOVA test mean comparisons were run to observe whether the variations between groups (different strategy groups of the same style) and within groups (the same strategy group of different styles) were statistically meaningful and significant (see Table 5 below).

Table 5: ANOVA Results

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	5.272727273	6	0.878787879	87.651123	1.463E-30	2.231189455
Within Groups	0.701818182	70	0.010025974			
Total	5.974545455	76				

Brown (1998) suggests that the fluctuations within groups and between groups be investigated in the form of a ratio (F ratio). If the variance between groups and the variance within groups are about the same and the ratio is about 1.0 or F critical, any differences arise from chance alone, and consequently, the null hypothesis is admitted. In our study the observed F ratio was 87.65 and F critical is 2.23. Consequently, the null hypothesis (H_0 III) is rejected at $p < .05$, since 87.65 is much greater than 2.23 ($87.65 > 2.23$). So there is only a 5% probability that the observed mean difference, $\mu_{vis} \neq \mu_{aud} \neq \mu_{hand}$... occurred by chance alone, or 95% probability that it was due to factors other than chance.

By rejecting the null hypothesis, we admitted the alternative hypothesis, i.e., the learner's learning style influences his/her choice of learning strategies. Our next step was to investigate to what extent the strategy groups varied from each other, and how significant this difference was. For this purpose we calculated the least significant difference (LSD) by the following formula:

$$\text{LSD} = \text{TINV} (0,05; 70) * \text{SQRT} (0,01 * (1/11 + 1/11)) = 0.09$$

If the observed difference between the strategy groups is either less than or close to 0.09 then the relationship is not significant, if the observed difference is greater than 0.09 the difference (df) is significant varying in the degree of significance from low to medium, and finally, if the observed difference is much greater than 0.09 the difference (df) is both significant and meaningful.

Our computations resulted in the following data: the difference between metacognitive and affective strategies was 0.86, metacognitive and memory: 0.77, metacognitive and cognitive: 0.54, metacognitive and overall strategy use: 0.55, compensation and affective: 0.49, social and affective: 0.41, social and metacognitive: 0.41, memory and compensation: 0.4, compensation and metacognitive: 0.37, affective and cognitive: 0.31, affective and overall: 0.31, memory and social: 0.31, memory and cognitive: 0.23, memory and overall: 0.21, compensation and overall: 0.18, compensation and cognitive: 0.17, social and overall: 0.1, social and cognitive: 0.09, memory and affective: 0.09, compensation and social: 0.08, cognitive and overall: 0.01. Though the results were rather diverse, most of the figure were larger than 0.09, i.e., the differences were statistically significant and some of them were meaningful.

We ranked the differences between strategy groups from high significance to low significance (see *Appendix XI*). The most significant differences were observed between metacognitive – affective (df = 0.86), and metacognitive – memory (df = 0.77), metacognitive - overall (df = 0.55), metacognitive - cognitive (df = 0.54), and affective – compensation (df = 0.49). The differences of the above-mentioned strategy pairs were not only statistically significant but also meaningful, as the observed data were much larger than LSD (0.86 > 0.09, 0.77 > 0.09, 0.55 > 0.09, 0.54 > 0.09, 0.49 > 0.09).

As for the differences of medium significance, they were observed between affective – social (df = 0.41), social – metacognitive (df = 0.41), compensation – memory (df = 0.4), compensation – metacognitive (df = 0.37), affective – overall (df = 0.31), affective – cognitive (df = 0.31), memory – social (df = 0.31).

There were four pairs of strategy groups the differences of which were of low significance, namely memory – cognitive (df = 0.23), memory – overall (df = 0.21), compensation – overall (df = 0.18), and compensation – cognitive (df = 0.17). As for the other five pairs of strategy groups, they were not significant at all, namely social – overall (df = 0.1), social – cognitive (df = 0.09), memory – affective (df = 0.09), compensation – social (df = 0.08), and cognitive – overall (df = 0.01) since the differences of the first four groups were close to 0.09, and the difference of the last pair was much smaller than 0.09 (0.01 < 0.09).

3.3 Descriptive Statistics

The obtained difference in results between the strategy groups were good indicators that language learning strategies were learning style driven; however, they only pinpointed the difference between the strategy groups without revealing which strategies were common for a given learning style. For this purpose, we calculated the descriptive statistics of the strategy use of each learning style to see whether there was a pattern typical of each learning style, i.e. to investigate the frequency of the strategies used by each style in terms of the central tendency or the typical behavior of the group and the dispersion or the variance from the typical behavior of the group. The frequencies of the strategy uses were estimated on the basis of the profiles of results suggested by Oxford (1989) ranging from 0 to 5 (see Table 7 below) and yielding the following results (See *Appendix XII*).

Table 7: Profile of Results

Strategy Use	Range	Interpretation
High	4.5 - 5	<i>always or almost always used</i>
	3.5 - 4.4	<i>usually used</i>
Medium	2.5 - 3.4	<i>sometimes used</i>
Low	1.5 - 2.4	<i>generally not used</i>
	1.0 - 1.4	<i>never or almost never used</i>

(Physical) Visual Style: The total of visual learners was 31 out of 60, i.e. 51.67%.

The descriptive statistics for visual learners showed the following central tendency of the visual learners' group:

- The mean for strategy use, i.e. the average score of visual learners' strategy use was as follows: memory: 3, cognitive: 3.2, compensation: 3.2, metacognitive: 3.8, affective: 2.9, social: 3.2, overall: 3.2. This means that an average visual learner usually uses metacognitive strategies, and sometimes uses memory, cognitive, compensation, affective, and social strategies. Overall, the average visual learner is a medium strategy user.
- The mode, i.e. the most frequent rate of visual learners' strategy use is the following: memory: 2.9, cognitive: 3.6, compensation: 3.2, metacognitive: 4.1, affective: 3.2, social: 4, overall: 3.4. This means that the most frequently occurring rates of the strategy use done by the visual learners were high (cognitive, metacognitive, social) and medium (memory, compensation, affective, overall).
- The median for the memory strategy was 3, for cognitive and compensation: 3.2, for metacognitive: 3.9, for affective: 2.8, for social: 3, and for overall strategy use: 3.3. This means that 50% of the visual learners rated their strategy use above the above-mentioned numbers, whereas the other 50% scored their own strategy use below the above-mentioned numbers.

The dispersion of the group was investigated through one indicator of dispersion, namely the standard deviation (SD) only, based on Brown's definition that "the standard

deviation provides a sort of average of the differences of all scores from the mean” (Brown, 1988, p.69). Brown (1988) identifies the other indicator of dispersion, i.e., range which was not taken into consideration in this study on the assumption that “the range provides some idea of how individuals vary from the central tendency, but it represents only the outer edges of that variation and, as a result, is strongly affected by behavior that may not be truly representative of the group as a whole” (p. 68). Thus, we decided not to consider the range, as the range results could affect the validity and reliability of the study.

The standard variation results were as follows: SD for memory and cognitive strategy groups was 0.6, for the compensation, metacognitive and affective strategy groups: 0.7, for the social strategy group: 0.9, and for overall strategy use: 0.5. These numbers show to what extent all the scores differ from the mean in average for each strategy group. Except for the SD of the social strategy group (0.9), all the other SDs vary from 0.1 to 0.2, which demonstrates the consistency of the variation between strategy groups.

For visual style learners the minimum or the lowest scores of the strategy use for the memory group was 1.7, for the cognitive, compensation, metacognitive and social groups it was 2, for the affective: 1.2, and for the overall strategy use: 2.4. The maximum or the highest scores of the strategy use for the memory group was 4.4, for the cognitive: 4.3, for the compensation: 4.6, metacognitive and social: 4.8, for the affective: 4, and for the overall strategy use: 4.1.

(Physical) Auditory Style: The total of auditory learners was 35 out of 60, i.e. 58.33%. The descriptive statistics for auditory learners showed the following central tendency of the auditory learners’ group:

- The mean for auditory learners’ strategy use for the memory group was 3, for the cognitive: 3.3, for the compensation: 3.5, for the metacognitive: 3.9, for the affective: 2.9, for the social: 3.4, and for the overall strategy use: 3.3. This means

that an average auditory learner usually uses metacognitive and compensation strategies, and sometimes uses memory, cognitive, affective and social strategies.

Overall, the average auditory learner is a medium level strategy user.

- The mode, i.e. the most frequent rate of auditory learners' strategy use for the memory was 2.9, cognitive: 3.3, compensation: 3.5, metacognitive: 4.1, affective: 2.5, social: 2.7, overall: 3.7. This means that some of the auditory learners rated their own strategy use high (compensation, metacognitive, overall) and medium (memory, cognitive, affective, social).
- The median of the auditory learners for the memory strategy group was 2.9, for cognitive: 3.3, for compensation: 3.5, for metacognitive: 3.9, for affective: 2.8, for social: 3.2, and for overall strategy use: 3.3. This means that 50% of the visual learners scored their strategy use above the above-mentioned numbers, whereas the other 50% scored their own strategy use below the above-mentioned figures.

The dispersion of the group was also investigated through the standard deviation (SD) for the reasons discussed in the descriptive statistics section for auditory learners. The standard deviation results were as follows: SD for the memory group was 0.7, for cognitive strategy: 0.5, for compensation: 0.7, for metacognitive: 0.5, for affective: 0.6, for social: 0.8, and for overall strategy use: 0.4. Thus, these figures show to what extent all the scores differ from the mean of each strategy group.

Except for the SD of the overall strategy use (0.4), all the other SDs vary at 0.1, 0.2, or 0.3, which shows the consistency of the variation between strategy groups.

The minimum or the lowest scores of the strategy use for the memory group was 1.6, for the cognitive and compensation: 2, metacognitive: 2.8, social: 2, for the affective: 1.2, and for the overall strategy use: 2.6. The maximum or the highest scores of the strategy use

for the memory group was 4.4, for the cognitive: 4.5, for the compensation, metacognitive and social: 4.8, for the affective: 4.2, and for the overall strategy use: 4.

(Physical) Hands-On Style: The total of hands-on learners was 32 out of 60, i.e. 53.33%. The descriptive statistics for hands-on learners resulted in the following central tendency of the hands-on learners' group:

- The mean for hands-on learners' strategy use for the memory group was 3.2, cognitive: 3.3, compensation: 3.6, metacognitive: 3.9, affective: 3, social: 3.4, overall: 3.3. This is to say that an average hands-on learner usually uses metacognitive and compensation strategies, and sometimes uses memory, cognitive, affective and social strategies. Overall, the average hands-on learner is a medium strategy user.
- The mode, i.e. the most frequently occurred rate of hands-on learners' strategy use for the memory was 2.9, cognitive and compensation: 3.5, metacognitive: 4.1, affective: 3.2, social: 3.7, overall: 3. That is to say, many of the hands-on learners rated their own strategy use high (compensation, metacognitive, social) or medium (memory, cognitive, affective, overall).
- The median of the hands-on learners for the memory strategy group was 3.1, for cognitive: 3.3, for compensation: 3.6, for metacognitive: 4, for affective: 3.1, for social: 3.5, and for overall strategy use: 3.4. Thus, 50% of the hands-on learners scored their strategy use above the above-mentioned figures, whereas the other 50% scored their own strategy use below the above-mentioned figures respectively.

The dispersion of the group was also investigated through the standard deviation (SD) for the reasons discussed in the descriptive statistics section for hands-on learners, and the results were as follows: SD for memory was 0.5, cognitive: 0.6, compensation: 0.7,

metacognitive: 0.5, affective: 0.7, social: 0.8, overall: 0.5. That is, these numbers show to what extent all the scores differ from the mean on the average for each strategy group. All the SDs vary at 0.1, 0.2, and 0.3, showing the consistency of the variation between strategy groups.

The minimum or the lowest scores of strategy use for the memory and cognitive groups was 1.9, for the compensation: 2, metacognitive: 2.3, social: 1.2, for the affective: 1.8, and for the overall strategy use: 2. The maximum or the highest scores of the strategy use for the memory group was 4.4, for the cognitive: 4.3, for the compensation: 4.8, for the metacognitive: 5, for social: 4, for the affective: 4.8, and for the overall strategy use: 4.1.

(Social) Extroverted Style: The total of extroverted learners was 51 out of 60, i.e. 85.00%. The descriptive statistics for extroverted learners resulted in the following central tendency data:

- The mean for extroverted learners' strategy use for the memory group was 3, cognitive: 3.3, compensation: 3.4, metacognitive: 3.8, affective: 2.9, social: 3.4, overall: 3.2 That is, an average extroverted learner usually uses metacognitive strategies, and sometimes uses memory, cognitive, compensation, affective and social strategies. Overall, the average extroverted learner is a medium level strategy user.
- The mode, i.e. the most frequent rate of extroverted learners' strategy use for memory was 2.9, cognitive: 3.3, compensation: 3.5, metacognitive: 4.1, affective: 2.8, social: 2.8, overall: 3.7 That is to say, many of the extroverted learners estimated their own strategy use high (compensation, metacognitive, overall) and medium (memory, cognitive, affective, social).
- The median of the extroverted learners for the memory strategy group was 3, for cognitive: 3.3, for compensation: 3.5, for metacognitive: 3.9, for affective: 2.8, for social: 3.3, and for overall strategy use: 3.3. Thus, 50% of the visual learners scored

their strategy use above the above-mentioned figures, whereas the other 50% scored their own strategy use below the above-mentioned figures.

The dispersion of the group in terms of the Standard Deviation was as follows: memory: 0.6, cognitive: 0.6, compensation: 0.7, metacognitive: 0.6, affective: 0.7, social: 0.9, overall: 0.5. There was a consistency between all the groups except the social, which deviated from the rest at 0.4.

The minimum or the lowest scores of strategy use for the memory group was 1.6, for the cognitive: 1.9, compensation and metacognitive: 2, for the social: 1.8, affective: 1.2, and for the overall strategy use: 2.5. The maximum or the highest scores of the strategy use for the memory was 4.4, for cognitive: 4.5, for the compensation: 4.8, for the metacognitive: 5, for affective: 4.2, for the social: 4.8, and for the overall strategy use: 4.1.

(Social) Introverted Style: The total of introverted learners was 20 out of 60, i.e. 33.33%. The descriptive statistics for these learners showed the following central tendency data:

- The mean for introverted learners' strategy use for the memory group was 3.2, cognitive: 3.2, compensation: 3.4, metacognitive: 3.7, affective: 3, social: 3.3, overall: 3.2. That is, an average introverted learner usually uses metacognitive strategies, and sometimes uses memory, cognitive, compensation, affective, and social strategies. Overall, the average introverted learner is a medium level strategy user.
- The mode, i.e. the most frequently occurred rate of introverted learners' strategy use for the memory was 3.6, cognitive: 3.6, compensation: 4, metacognitive: 4.4, affective: 2.5, social: 3, overall: 3.3. That is some of the introverted learners gave high rates to memory, cognitive, compensation and metacognitive, and medium rates to affective, social, and overall strategy use.

- The median of the introverted learners for the memory and cognitive strategy groups was 3.2, for compensation: 3.3, for metacognitive: 3.9, for affective: 3, for social: 3.3, and for overall strategy use: 3.3. Thus, 50% of the introverted learners scored their strategy use above the above-mentioned figures, whereas the other 50% scored their own strategy use below the above-mentioned figures.

The dispersion of the group in terms of the Standard Deviation was as follows:

memory: 0.6, cognitive: 0.6, compensation: 0.7, metacognitive: 0.6, affective: 0.8, social: 0.6, overall: 0.4. All the six strategy groups varied either for 0.1 or 0.1, except the overall strategy use that deviated at 0.8 at most.

The minimum or the lowest scores of the strategy use for the memory group was 1.9, for the cognitive: 2, for compensation: 2.2, for metacognitive: 2, for the affective: 1.2, for social: 2.2, and for the overall strategy use: 2.5. The maximum or the highest scores of the strategy use for the memory group was 4.1, cognitive: 4, for the compensation: 4.5, for the metacognitive: 4.4, for social: 4.5, for the affective: 4, and for the overall strategy use: 3.9.

(Handling Possibilities) Intuitive Style: The total of intuitive learners was 44 out of 60, i.e. 73.33%. The descriptive statistics for these learners showed the following central tendency data:

- The mean for learners' strategy use for the memory group was 3, cognitive: 3.2, compensation: 3.5, metacognitive: 3.8, affective: 2.8, social: 3.2, overall: 3.2. That is, an average intuitive learner usually uses metacognitive and compensation strategies, and sometimes uses memory, cognitive, affective, and social strategies. Overall, the average intuitive learner is a medium level strategy user.
- The mode, i.e. the most frequent rate of intuitive learners' strategy use for the memory was 3.6, cognitive: 3.5, compensation: 3.8, metacognitive: 4.1, affective: 2.5, social: 2.8, overall: 2.8. That is, memory, cognitive, compensation and metacognitive

strategies got high rates, whereas affective, social and overall strategies got medium rates.

- The median of the intuitive learners for the memory strategy group was 3, for cognitive: 3.3, for compensation: 3.5, for metacognitive: 3.9, for affective: 2.8, for social: 3, and for overall strategy use: 3.3. Thus, 50% of the intuitive learners scored their strategy use above the above-mentioned figures, whereas the other 50% scored their own strategy use below the above-mentioned figures.

The dispersion of the group in terms of the Standard Deviation was as follows:

memory: 0.6, cognitive: 0.6, compensation: 0.7, metacognitive: 0.6, affective: 0.7 social: 0.8 overall: 0.5. All six strategy groups varied either at 0.1 or 0.2, except for overall strategy use, which deviated at 0.3 at most.

The minimum or the lowest scores of the strategy use for the memory group was 1.6, for the cognitive: 1.9, for compensation: 2, for metacognitive: 2, for the affective: 1.2, for social: 1.8, and for the overall strategy use: 2. The maximum or the highest scores of the strategy use for the memory group was 4.4, cognitive: 4.5, for the compensation: 4.8, for the metacognitive: 5, for the affective: 4, for the social: 4.8, and for the overall strategy use: 4.1.

(Handling Possibilities) Concrete Sequential Style: The total of concrete sequential learners was 33 out of 60, i.e. 55%. The descriptive statistics for these learners showed the following central tendency data:

- The mean for concrete sequential learners' strategy use for the memory group was 3, cognitive: 3.4, compensation: 3.5, metacognitive: 3.9, affective: 3.1, social: 3.5, overall: 3.3. This means that an average concrete sequential learner usually uses metacognitive, compensation, and social strategies, and sometimes uses memory, cognitive, affective strategies. Overall, the average concrete sequential learner is a medium level strategy user.

- The mode, i.e. the most frequent estimation of concrete sequential learners' strategy use for the memory was 2.9, cognitive: 3.6, compensation: 3.5, metacognitive: 4.1, affective: 3.2, social: 3.7, overall: 3.7. This means that cognitive, compensation, metacognitive, social and overall strategies were rated high, while memory and affective strategies were rated medium.
- The median of the concrete sequential learners for the memory strategy group was 3, for cognitive: 3.4, for compensation: 3.5, for metacognitive: 4, for affective: 3.2, for social: 3.5, and for overall strategy use: 3.3. Thus, 50% of the concrete sequential learners scored their strategy use above the above-mentioned figures, whereas the other 50% scored their own strategy use below the above-mentioned figures.

The dispersion of the group in terms of the Standard Deviation was as follows:

memory: 0.6, cognitive: 0.6, compensation: 0.6, metacognitive: 0.6, affective: 0.7 social: 0.8 overall: 0.4. All six strategy groups varied either at 0.1 or 0.2, except for overall strategy use, which deviated at 0.4 at most.

The minimum or the lowest scores of strategy use for the memory group was 1.9, for the cognitive: 2, for compensation: 2.3, for metacognitive: 2.4, for the affective: 1.7, for social: 2, and for the overall strategy use: 2.6. The maximum or the highest scores of the strategy use for the memory group was 4.4, cognitive: 4.5, for the compensation: 4.8, for the metacognitive: 4.8, for the affective: 4.2, for the social: 4.8, and for overall strategy use: 4.

(Approach to Tasks) Closure-Oriented Style: The total of closure-oriented learners was 53 out of 60, i.e. 88.33%. The descriptive statistics for these learners showed the following central tendency data:

- The mean for closure-oriented learners' strategy use for the memory group was 3, cognitive: 3.3, compensation: 3.4, metacognitive: 3.8, affective: 2.9, social: 3.4, overall: 3.3. This means that an average closure-oriented learner usually uses

metacognitive strategies, and sometimes uses memory, cognitive, compensation, social, and affective strategies. Overall, the average closure-oriented learner is a medium level strategy user.

- The mode, i.e. the most frequent rate of closure-oriented learners' strategy use for the memory was 2.9, cognitive: 3.3, compensation: 3.5, metacognitive: 4.1, affective: 3.2, social: 2.8, overall: 3.4. That is, memory, cognitive, affective, social, and overall strategies got medium rates, while compensation and metacognitive strategies got high rates.
- The median of the closure-oriented learners for the memory strategy group was 3, for cognitive: 3.3, for compensation: 3.5, for metacognitive: 3.9, for affective: 2.8, for social: 3.3, and for overall strategy use: 3.3. Thus, 50% of the concrete sequential learners scored their strategy use above the above-mentioned figures, whereas the other 50% scored their own strategy use below the above-mentioned figures.

The dispersion of the group in terms of the Standard Deviation was as follows: memory: 0.6, cognitive: 0.6, compensation: 0.7, metacognitive: 0.6, affective: 0.7, social: 0.8, overall: 0.5. All the six strategy groups varied either at 0.1 or 0.2, except for overall strategy use, which deviated at 0.3 at most.

The minimum or the lowest scores of the strategy use for the memory group was 1.6, for the cognitive: 1.9, for compensation: 2, for metacognitive: 2, for the affective: 1.2, for social: 1.8, and for overall strategy use: 2. The maximum or the highest scores of the strategy use for the memory group was 4.4, cognitive: 4.5, for the compensation: 4.8, for the metacognitive: 5, for the affective: 4.2, for the social: 4.8, and for the overall strategy use: 4.

(Approach to Tasks) Open Style: The total of open learners was 14 out of 60, i.e. 23%. The descriptive statistics for this group of learners showed the following central tendency data:

- The mean for open learners' strategy use for the memory group was 3, cognitive: 3.4, compensation: 3.7, metacognitive: 3.9, affective: 3.3, social: 3.4, overall: 3.4. This means that an average open learner usually uses metacognitive and compensation strategies, and sometimes uses memory, cognitive, social, and affective strategies. Overall, the average open learner is a medium level strategy user.
- The mode, i.e. the most frequent rate of open learners' strategy use for memory strategy was 3.6, cognitive: 3.8, compensation: 3.8, metacognitive: 4.2, affective: 3.8, social: 3.7, overall: 3.5. This means all the strategy uses were rated high.
- The median, i.e. the middle point in a distribution, for the memory strategy was 3, for cognitive: 3.5, for compensation: 3.8, for metacognitive: 3.9, for affective: 3.3, for social: 3.7, and for overall strategy use: 3.5. This means that 50% of the open learners scored their strategy use above the above-mentioned numbers, whereas the other 50% scored their own strategy use below the above-mentioned numbers.

The dispersion of the group in terms of the Standard Deviation was as follows: memory: 0.6, cognitive: 0.5, compensation: 0.6, metacognitive: 0.7, affective: 0.7, social: 0.8, overall: 0.4. All six strategy groups varied either at 0.1 or 0.2, except for overall strategy use, which deviated at 0.4 at most.

The minimum or the lowest scores of the strategy use for the memory group was 1.6, for the cognitive: 2, for compensation: 2.8, for metacognitive: 2.5, for the affective: 2.2, for social: 2, and for overall strategy use: 2.7. The maximum or the highest scores of the strategy use for the memory group was 3.8, cognitive: 4, for compensation: 4.8, for metacognitive: 5, for affective: 4.2, for social: 4.7, and for overall strategy use: 3.9.

(Dealing with Ideas) Global Style: The total of global learners was 55 out of 60, i.e. 91.67%. The descriptive statistics for this group of learners showed the following central tendency data:

- The mean for global learners' strategy use for the memory group was 3, cognitive: 3.3, compensation: 3.5, metacognitive: 3.8, affective: 2.9, social: 3.4, overall: 3.3. That is, an average global learner usually uses metacognitive and compensation strategies, and sometimes uses memory, cognitive, social, and affective strategies. Overall, the average global learner is a medium level strategy user.
- The mode, i.e. the most frequent rate of global learners' strategy use for the memory was 2.9, cognitive: 3.3, compensation: 3.8, metacognitive: 4.1, affective: 3.2, social: 3.7, overall: 3.7. This means that memory, cognitive and affective strategies got medium rates, whereas compensation, metacognitive, social and overall strategy use got high rates.
- The median, i.e. the middle point in a distribution, for the memory strategy was 3, for cognitive: 3.4, for compensation: 3.5, for metacognitive: 3.9, for affective: 2.8, for social: 3.3, and for overall strategy use: 3.4. This means that 50% of the global learners scored their strategy use above the above-mentioned numbers, whereas the other 50% scored their own strategy use below the above-mentioned numbers.

The dispersion of the group in terms of the Standard Deviation was as follows: memory: 0.6, cognitive: 0.6, compensation: 0.7, metacognitive: 0.6, affective: 0.7, social: 0.8, overall: 0.5. All six strategy groups varied either at 0.1 or 0.2, except for overall strategy use, which deviated at 0.3 at most.

The minimum or the lowest scores of the strategy use for the memory group was 1.6, for the cognitive: 1.9, for compensation: 2.2, for metacognitive: 2, for the affective: 1.2, for social: 1.8, and for overall strategy use: 2. The maximum or the highest scores of the strategy use for the memory group was 4.4, cognitive: 4.5, for compensation: 4.8, for the metacognitive: 5, for the affective: 4.2, for the social: 4.8, and for overall strategy use: 4.1.

(Dealing with Ideas) Analytic Style: The total of analytic learners was 21 out of 60, i.e. 35%. The descriptive statistics for this group of learners showed the following central tendency data:

- The mean for analytic learners' strategy use for the memory group was 3.2, cognitive: 3.2, compensation: 3.3, metacognitive: 3.8, affective: 2.9, social: 3.5, overall: 3.3. That is, an average analytic learner usually uses metacognitive and social strategies, and sometimes uses memory, cognitive, compensation, and affective strategies. Overall, the average learner is a medium level strategy user.
- The mode, i.e. the most frequent rate of analytic learners' strategy use for the memory was 2.9, cognitive: 3.5, compensation: 3.3, metacognitive: 3.8, affective: 3.2, social: 3, overall: 3.4. That is, high rates were given to cognitive and metacognitive strategies, and medium rates were given to memory, compensation, affective, social and overall.
- The median, i.e. the middle point in a distribution, for memory strategy was 3.1, for cognitive: 3.2, for compensation: 3.3, for metacognitive: 3.9, for affective: 3, for social: 3.3, and for overall strategy use: 3.3. This means that 50% of the analytic learners scored their strategy use above the above-mentioned numbers, whereas the other 50% scored their own strategy use below the above-mentioned numbers.

The dispersion of the group in terms of the Standard Deviation was as follows: memory: 0.5, cognitive: 0.5, compensation: 0.7, metacognitive: 0.6, affective: 0.7, social: 0.7, overall: 0.4. All six strategy groups varied either at 0.1 or 0.2, except for overall strategy use, which deviated at 0.3 at most.

The minimum or the lowest scores of the strategy use for the memory group was 2.1, for cognitive: 2, for compensation: 2, for metacognitive: 2.4, for affective: 1.2, for social: 2, and for overall strategy use: 2.5. The maximum or the highest scores of the strategy use for

the memory group was 4.1, cognitive: 4.1, for compensation: 4.5, for metacognitive: 4.8, for affective: 4, for social: 4.8, and for overall strategy use: 4.

CHAPTER 4: DISCUSSION OF THE FINDINGS

The intent of the study was to investigate the relationship between a number of variables, namely the relationship between the learning styles as the dependent variable and ethnicity as the independent variable, and the relationship between the language learning strategy use as the dependent variable and learning styles as the independent variable. The results of the quantitative data collected through the questionnaires confirm the initial hypotheses discussed in Chapter 3 and support the findings of previous research (e.g. Green, 1991; Green and Oxford, 1993; Touba, 1992). Researchers have found a statistical bond between learners' choice of learning strategies and their essential learning styles (Ehrman & Oxford, 1990; Ely, 1989, as cited in Oxford, 1992/1993). Nevertheless, to address the issues sufficiently, the results must be considered individually.

4.1 Discussion of the Identification of Learning Styles Typical of Armenian Learners

The alternative hypotheses II and I that assume a statistically significant difference between frequencies of the students' learning styles and a statistically significant proportion (p) that reflects the commonly shared learning style of Armenian university students are accepted. Moreover, despite the convincing evidence shown by the results of the sample population data, the true population proportions were calculated as well on the basis of the sample population so that the claims could be generalized for the whole Armenian university population. These quantitative data results give ground for the following claims:

- Most Armenian learners show a strong preference for global, closure-oriented and extroverted styles. The proportions of these learners for the sample population are the following: global style: $p = 0.9$ or 91%, closure-oriented: $p = 0.9$ or 87%, and extroverted: $p = 0.9$ or 84%. The range proportions of the true population are 0.85 -

0.99 or 85%-99%, closure-oriented: 0.8 – 0.96 or 80% - 96%, and extroverted: 0.76-0.94 or 76% - 94%.

- Analytic, introverted, and open styles are not usually shared by Armenian university learners. Sample population proportions of these styles are: analytic: $p = 4$ or 32%, introverted: $p = 0.3$ or 30% and open: $p = 0.2$ or 20%. The range proportions of the true population are analytic: 0.23 - 0.41 or 23%-41%, introverted: 0.21 – 0.45 or 21% - 45%, and open: 0.12 - 0.23 or 12% - 23%.

The differences between these proportions may be explained by the educational or instructional system of Armenia, which still is influenced by the strictly centralized, formal, and highly rule-oriented features of the ex-Soviet educational system. Therefore, Armenian learners are accustomed to global thinking and not to an analytic style, and they are closure-oriented and not open. That is to say Armenian learners are inclined to see the whole picture instead of breaking it to pieces, and they stick to the rules without keeping an open mind on things that are outside of the rules.

As for the Armenian learners' preference for the extroverted style to introverted one, nationality traits seem to account for this, i.e. Armenians are very cooperative and sociable by nature, and they like to discuss things and solve problems cooperatively.

- Although intuitive, auditory, concrete sequential, hands-on and visual styles much account for a statistically significant proportion, with the sample proportion range from 0.5 to 0.7 or from 50% to 71%, and with the true population proportion range from at least 0.39–0.62 or 39%-62%, and at most 0.65–0.84 or 65% - 84%, no strong claims can be made that they are typical of Armenian learners since they are not very close to 1, or in terms of percentages, close to 100%. With regard to the interpretation of the results of the these five learning styles, preferences for them may be attributed to a number of confounding personality factors, such as an

individual's character and habit, which are typical of human beings in general regardless of the ethnicity or nationality.

4.2 The relationship between learning styles and strategies for Armenian university learners

The null hypothesis III suggesting that there is no statistically significant and meaningful relationship between the learners' learning style and strategy choice was rejected with the help of mean comparisons. The results of the one-way ANOVA statistical test used for testing the hypothesis revealed a significant difference between F_{observed} (87.65) and F_{critical} (2.23) at the significance level (α) set at .05 ($\alpha < .05$), and the confidence level - 95 % respectively. Consequently, the relationship between the learning style and strategy use of Armenian university students is statistically significant and meaningful, because F_{observed} is much larger than F_{critical} . This may indicate that the students' answers were accurately chosen, i.e., neither an overestimation nor an underestimation of their own strategy use. This factor contributes to the internal validity of the study.

The extent to which the strategy groups varied significantly from each other was investigated by calculating the least significant difference (LSD), which was equal to 0.09.

The results revealed that there were statistically high significant and meaningful differences between metacognitive and affective strategies ($df = 0.86$), metacognitive and memory strategies ($df = 0.77$), metacognitive and cognitive strategies ($df = 0.54$), metacognitive and overall strategy use ($df = 0.55$), and affective and compensation strategies ($df = 0.49$).

There were statistically medium significant differences between affective and social strategies ($df = 0.41$), social and metacognitive ($df = 0.41$), compensation and memory ($df = 0.4$), compensation and metacognitive ($df = 0.37$), affective and overall ($df = 0.31$), affective and cognitive ($df = 0.31$), memory and social ($df = 0.31$). These difference intervals

show that some learning styles involve greater use of metacognitive strategies as compared to affective, memory, cognitive, compensation, social and overall strategy use, and vice versa, or more affective strategies as compared to compensation and social.

Other statistically low but significant differences were observed between memory and cognitive strategies ($df = 0.23$), memory and overall ($df = 0.21$), compensation and overall ($df = 0.18$), and compensation and cognitive ($df = 0.17$). These difference intervals suggest that to some extent some learning styles involve more affective strategies than cognitive and overall, or more memory strategies than social, cognitive and overall, and somewhat more compensation strategies than cognitive, and overall, or vice versa.

There were also pairs of strategy uses that were not statistically significant at all, namely social and overall ($df = 0.1$), social and cognitive ($df = 0.09$), memory and affective ($df = 0.09$), compensation and social ($df = 0.08$), and cognitive and overall strategy use ($df = 0.01$). These differences show that the use of social vs. cognitive, compensation, and overall was more or less the same, as that of memory vs. affective strategies. This means that in any learning style they are used with almost the same frequency.

Although these results indicated differences between the strategy groups, they still did not reveal which strategies were favored by a given learning style. That is why we computed the descriptive statistics of the strategy use of each learning style to get a complete picture of the frequency of the strategies used by each learning style. The descriptive statistics revealed the extent to which the six strategy groups and the overall strategy use were exploited by the learners of each learning style. The results were interpreted according to the scale ranging from 1.0 to 5.0 designed by Oxford (1989). The range from 4.5 to 5 indicated high strategy use, i.e. these are the strategies that are always or almost always used. The strategy range from 3.5 to 4.4 also shows high strategy use, but these strategies are usually used. The medium range is from 2.5 to 3.4, i.e. the strategies within this range are sometimes used. As

for the low strategy use range, like the high range it is divided into two parts: the range from 1.5 to 2.4 indicates that the strategies within this range are generally not used, while the range from 1.0 to 1.4 shows that these strategies are never or almost never used.

According to Oxford (1993), learners can be visual, auditory, and hands-on in terms of using their physical senses to study or work. Visual learners can visualize pictures, numbers, or words in their heads, highlight the most important parts they read, and look at people to understand what they say. Unlike visual learners auditory learners prefer to learn something by listening rather than reading, need oral directions for tasks, and can easily understand people without looking at them. As for hands-on people, they move their lips when reading silently, get nervous when they sit too long, think better when they move around and remember better when they manipulate objects.

Visual learners: The mean for strategy use, i.e. the average rate of visual learners' strategy use was as follows: memory: 3, cognitive: 3.2, compensation: 3.2, metacognitive: 3.8, affective: 2.9, social: 3.2, overall: 3.2. That is, visual learners usually use metacognitive strategies, and sometimes use memory, cognitive, compensation, affective, and social strategies according to Oxford (1990). Overall, the average visual learner is a medium level strategy user. This means that visual learners prefer metacognitive strategies to memory, cognitive, compensation, affective and social strategies; however, their overall strategy use is medium level, i.e. not overly frequent.

Metacognitive strategies fall in the indirect strategy group, and they are used "to coordinate the learning process by using functions such as centering arranging, planning, and evaluating" (Oxford, 1990, p. 135). The following explanation may account for visual learners' preference for this strategy group:

- Visual learners are inclined to control and monitor their own learning, i.e. to set goals, to work on or monitor their mistakes, and constantly evaluate their learning

progress. This can account for the fact that the learners may be familiar with the functions mentioned above from other disciplines studied before, as these functions are of general character and can be applicable in any subject or discipline.

Auditory learners: The mean results for auditory learners' strategy use for the memory group was 3, for cognitive: 3.3, for compensation: 3.5, for metacognitive: 3.9, for affective: 2.9, for social: 3.4, and for overall strategy use: 3.3. Thus, Oxford (1990) states that auditory learners usually use metacognitive and compensation strategies, and sometimes use memory, cognitive, affective and social strategies. Overall, the average visual learner is a medium level strategy user. That is to say, auditory learners prefer compensation and metacognitive strategies to memory, cognitive, affective and social groups. However, their overall strategy use is medium level like that of the visual learners.

Compensation strategies are in the group of direct strategies, i.e. they are directly involved in the learning process. Compensation strategies help learners to use the language in spite of their limitations in knowledge. This strategy group includes the following strategies, guessing intelligently by using linguistic and other clues, and overcoming limitations in speaking and writing by switching to the mother tongue, getting help, using mime and gesture, avoiding communication partially or totally, selecting the topic, adjusting or approximating the message, coining words, and using a circumlocution or a synonym. Thus, Armenian auditory learners actively use not only compensation strategies, but also metacognitive strategies. The following reasons may account for their strategy preference:

- One subgroup of compensation strategies, namely guessing intelligently is "essential for listening"(Oxford, 1990, p. 90), i.e., these learners' learning style drives them to actively use linguistic as well as non- linguistic clues to get the meaning of what is heard.

- Auditory learners actively use metacognitive strategies that deal with planning, organizing and controlling the learning process. The reason for the auditory learners' preference shown to this strategy group may be similar to the case of visual learners. That is auditory learners also may be familiar with these strategies, that are general in character, from other disciplines or subjects studied before.

Thus, based on the data results it can be concluded that Armenian auditory learners use both direct (e.g. compensation) and indirect (e.g. metacognitive) strategies in the learning process.

Hands-on learners: The mean for hands-on learners' strategy use for the memory group was 3, for cognitive strategies - 3.3, for compensation: 3.5, for metacognitive: 3.9, for affective: 2.9, for social: 3.4, and for overall strategy use: 3.3. Like auditory learners, hands-on learners of the physical style group usually use metacognitive and compensation strategies, and sometimes use memory, cognitive, affective and social strategies. Overall, the average hands-on learner is a medium level strategy user. There may be two reasons for this choice:

- As was described above, compensation strategies are direct strategies that help the learners to get the meaning of unfamiliar language units either by guessing or by overcoming limitations in speaking and writing, whereas metacognitive strategies help learners to organize and monitor their learning. The hands-on or tactile learners' preference for these two strategy groups may relate to the fact that since hands-on learners prefer active physical involvement in their learning, they are likely to use such strategies that involve physical motion. There is a strategy in the compensation strategy group, namely using mime or gesture or using physical motion instead of an expression to indicate the meaning that might be favored by hands-on learners.

- As for the active use of metacognitive strategies by hands-on learners, it may also be due to the fact that metacognitive strategies are of general character and can be applied to a number of disciplines. Consequently, these learners as well may have been familiar with them before.

In terms of dealing with other people, learners can be extroverted and introverted.

According to Oxford (1993) extroverted learners prefer to work or study with others, develop personal contact easily, and tend to be in groups of people, while introverted learners prefer to work or study alone, avoid being in group, and find it hard to contact with people.

Extroverted learners: The mean for extroverted learners' strategy use for the memory group was 3, cognitive: 3.3, compensation: 3.4, metacognitive: 3.8, affective: 2.9, social: 3.4, overall: 3.2. That is, social - extroverted learners usually use metacognitive strategies, and sometimes use memory, cognitive, compensation, and affective and social strategies. Overall, the average extroverted learner is a medium level strategy user. That is to say, extroverted learners prefer metacognitive – indirect strategies only. There may be two reasons for this:

- Metacognitive strategies help learners to center, arrange, plan and evaluate their learning, and they can be applied to a variety of disciplines. Hence, the learners may have applied these strategies in the subjects studied before, and they then transfer these strategies to learning a new language.
- Metacognitive strategies include a strategy that involves a lot of socializing, namely seeking practice opportunities. Since extroverted learners are sociable by nature, they might prefer the strategy seeking practice opportunity in particular.

Introverted learners: The mean for introverted learners' strategy use for the memory group was 3.2, cognitive strategies: 3.2, compensation: 3.4, metacognitive: 3.7, affective: 3, social: 3.3, overall: 3.2. That is, introverted learners usually use metacognitive strategies, and sometimes use memory, cognitive, compensation, affective, and social strategies. Overall, the

average introverted learner is a medium level strategy user. In other words, like extroverted learners introverted learners also prefer metacognitive strategies only. There may be one reason for this:

- Oxford (1990) describes introverted learners as detached or reserved by nature who prefer individual learning to cooperative learning. Therefore, they may be more concerned with monitoring and evaluating their learning rather than seeking opportunities for practice. Thus, the main reason for introverted learners' preference for metacognitive strategies is that these strategies are of general character and applicable to a variety of disciplines. Hence, the learners should be both familiar with and used to them from their previous studies.

In terms of handling possibilities, learners may be intuitive and concrete sequential. Intuitive learners like to think of lots of new ideas, can think of many solutions to the problem, and like multiple possibilities and options, whereas concrete sequential learners tend to be narrow-minded, as opposed to intuitive learners, i.e. they like plans to be clear, things to be explained and presented in a step-by- step order. Moreover, they avoid too many options or new ideas.

Intuitive learners: The mean of intuitive learners' strategy use for the memory group was 3, cognitive strategies: 3.2, compensation: 3.5, metacognitive: 3.8, affective: 2.8, social: 3.2, overall: 3.2, which means that average intuitive learners usually use metacognitive and compensation strategies, and sometimes uses memory, cognitive, affective, and social strategies. However, their overall strategy use medium level, i.e. more frequent. What accounts for the intuitive learners' preference for compensation - direct and metacognitive-indirect strategies to memory, cognitive, affective, and social strategy groups may be the following:

- Since according to Oxford (1990) the aim of compensation strategies is to get learners to use the new language in spite of knowledge gaps, intuitive learners should be comfortable with such compensation strategies as coining new words, adjusting or approximating the messages as well as guessing by the use of linguistic and non-linguistic clues due to their open-mindedness. In other words, intuitive learners are not afraid of new things; they are ready to guess relying on their intuition.
- Like the learners of physical and social groups described above, intuitive learners favor metacognitive strategies, since they might have exploited them in other disciplines or subjects, such as mathematics, physics or history or the Armenian and Russian languages.

Concrete- sequential learners: Concrete-sequential learners' strategy use for the memory group was 3, for cognitive strategies: 3.4, compensation: 3.5, metacognitive: 3.9, affective: 3.1, social: 3.5, overall: 3.3. This means that concrete sequential learners usually use metacognitive, compensation, and social strategies, and sometimes uses memory, cognitive and affective strategies. Nevertheless, the overall strategy use of these learners is medium level, i.e. not overly frequent. The reasons why concrete sequential learners show a preference for compensation, metacognitive and social strategies may be as follows:

- According to Oxford (1990), concrete-sequential learners tend to be narrow-minded, as opposed to intuitive learners, i.e. they like plans to be clear, things to be explained and presented in a step-by- step order. Moreover, they avoid too many options or new ideas. From the group of compensation strategies, they may regularly use such strategies as guessing intelligently by means of linguistic clues, avoiding communication partially or totally, selecting the topic, adjusting and approximating the message, and using circumlocution or a synonym. Since

concrete sequential learners tend to keep to grammar rules of structures, they are likely to guess intelligently due to their prior knowledge of the structure or grammatical rules of the language. And since concrete sequential learners tend to avoid many options or untested ideas, they would employ the strategy of avoiding communication partially or totally whenever they fail to guess. They also would adjust or approximate the message to the rules or structures familiar to them. Finally, they would use synonyms instead of the new language again based on their prior knowledge.

- Metacognitive strategies may be extensively used by concrete sequential learners because of having a large scope of application. That is, concrete sequential learners may have experience in employing metacognitive strategies in other disciplines, since this strategy group deals with organizing, monitoring, and evaluating the learning process.
- Due to their learning style concrete sequential learners favor social strategies because they might need both to clarify and verify what they are learning. Since learners of this type prefer to avoid too many options and like concrete facts, clarification or verification of the question can help them progress in the learning process.

In terms of approaching tasks, learners can be closure- oriented or open. Closure oriented learners are organized people who enjoy a lot of structure and follow their plans. They also make decisions quickly, start and finish tasks on time. Unlike closure-oriented learners, open learners are spontaneous people who are uncomfortable with a lot of structure and feel fine about changing their minds. They make decisions as late as possible and find deadlines useless (Oxford, Style Analysis Survey, 1993).

Closure-oriented learners: The mean for closure-oriented learners' strategy use for the memory group was 3, for cognitive strategies: 3.3, compensation: 3.4, metacognitive: 3.8, affective: 2.9, social: 3.4, overall: 3.3. This means closure-oriented learners usually use metacognitive strategies, and sometimes uses memory, cognitive, compensation, social, and affective strategies. In other words, they show a preference for metacognitive-indirect strategies only. Their overall strategy use is medium level or not overly frequent. The reason for their favoring metacognitive strategies may be as follows:

- Since this type of learner is organized and prefers to have things planned, while learning a language he might be more concerned with organizing, planning, monitoring, and evaluating his learning. Though, like other types of learners, the closure-oriented learner may be familiar with metacognitive strategies from other subjects or disciplines, the primary reason for favoring these strategies may be his personality or learning style factor.

Open learners: The mean for open learners' strategy use for the memory group was 3, for cognitive strategies: 3.4, compensation: 3.7, metacognitive: 3.9, affective: 3.3, social: 3.4, overall: 3.4, i.e., open learners usually use metacognitive and compensation strategies, and sometimes use memory, cognitive, social, and affective strategies. Their overall strategy use is medium level. The following reasons may account for open learners' preference for metacognitive-indirect and compensation-direct strategies:

- Oxford (1990) states that open learners prefer metacognitive strategies because these strategies are of general character or applicable to a variety of disciplines. Like all the other learners, open learners may be familiar with them from school, therefore, they may be comfortable with using these strategies, namely centering, monitoring and evaluating their learning, while learning a new language

- Open learners may favor compensation strategies from the group of the direct strategies, because they “keep an open mind about things” (Oxford, SAS question 17, 1993), i.e., due to their open- mindedness they may use linguistic as well as nonlinguistic clues in guessing to fill gap in knowledge. They may also ask someone for help or coin new words to convey the desired idea.

Overall, open learners mostly use the combination of direct – compensation and indirect – metacognitive strategies while learning a new language.

In terms of dealing with ideas, learners can be global and analytic. Global learners tend to see the overall plan or picture, ignoring irrelevant details. They can summarize information easily, and they prefer simple answers to detailed ones. In contrast to global learners, analytic learners like to break general ideas down into smaller pieces and focus on the details rather than the whole picture. They also use their logic to solve problems and are comfortable with detailed answers rather than simple ones (Oxford, 1993).

Global learners: The mean for global learners’ strategy use for the memory group was 3, cognitive: 3.3, compensation: 3.5, metacognitive: 3.8, affective: 2.9, social: 3.4, overall: 3.3, which means that on average global learners usually use metacognitive and compensation strategies, and sometimes use memory, cognitive, social, and affective strategies. Overall, the average global learner is a medium level or not very highly active strategy user. The following reasons may account for global learners’ preference for compensation- direct and metacognitive – indirect strategies to the other groups:

- Since global learners see the whole picture focusing on the main ideas and avoiding irrelevant details, they might widely use such compensation strategies as guessing intelligently by means of linguistic and non- linguistic clues, to get the main idea, or adjusting or approximating the message, i.e. omitting some items of information, to make the idea simpler or less precise.

- As for metacognitive strategies, they seem to be extensively used by all types of learners due to their universal character. That is, learners may transfer metacognitive strategies to the new language learning from other disciplines studied before.

On the whole, global learners use the combination of direct and indirect strategies in the learning process.

Analytic learners: The mean for analytic learners' strategy use for the memory group was 3.2, cognitive: 3.2, compensation: 3.3, metacognitive: 3.8, affective: 2.9, social: 3.5, overall: 3.3. This means that on average analytic learners usually use metacognitive and social strategies, and sometimes use memory, cognitive, compensation, and affective strategies. Overall, the average learner is a medium level or moderately active strategy user. The reasons that account for their strategy choices could be as follows:

- As analytic learners tend to break down the whole picture into smaller pieces or use logical steps to analyze and solve problems, they may be predisposed to apply such social strategies, as asking questions for clarification or verification, and correction as well as cooperating with others to focus on the details, specific tasks, and information.
- This type of learner is like others in our study, i.e. they prefer metacognitive strategies to center their learning by means of paying attention, arranging and planning their learning through organizing, setting goals and objectives as well as monitoring or evaluating their learning. These strategies seem to be universal and wide- ranging, therefore cannot make strong claims that these strategies are typical of a certain learning style.

Overall, analytic learners are frequent users of indirect strategies; however, their overall strategy use is only moderately active.

Overall the findings of the study show that learners of all the identified 11 individual learning styles homogeneously show a strong preference for metacognitive – indirect strategies that deal with centering, monitoring, controlling and evaluating the learning process.

Since Armenian university learners are global, closure-oriented and extroverted, they regularly use metacognitive - indirect and compensation –direct strategies and occasionally use memory, cognitive, affective and social strategies. However, regardless of their learning style preference, all Armenian university learners are medium strategy users, i.e. they are neither markedly active nor passive users of the six identified strategy groups.

Limitations of the Study

A number of limitations can be identified in this study. First of all the number of subjects initially was 69. However, in the course of the data collection, the number dropped to 60 due to the following:

- Subject A-12 completed only the SILL questionnaire and left the SAS unfinished. We discarded this one, since the data were incomplete.
- Subject B11 completed the SAS, without completing the SILL. This subject was discarded as irrelevant for our purposes.
- We discarded Subject C19, on the assumption that he apparently did not take the task of completion the questionnaires seriously, since during analyses of his responses, we noticed a strange pattern (the numbers constantly followed the same sequence 0-1-2-3-4-3-4-2-1-0). When we viewed it more attentively, we saw a zigzag-like pattern throughout both of the questionnaires and understood that he was just having fun, without even making an attempt to respond to the questions.

- E-8 was discarded for technical reasons. She completed both questionnaires with due diligence, but afterwards it appeared that in the SAS one of the sheets was left out by the photocopier, thus making the results inconsistent.
- A-13, D-13 and E-10 did not answer some of the questions and their data were of no use for us, since this would have brought to inaccurate results.
- C-20 and E-9 gave two answers to some of the questions; therefore they were also discarded from the study.

The second limitation of the study appeared again in the data collection phase.

Initially, when developing the background questionnaire, we included questions regarding samples' age, sex, academic major, language ability level. However, in the actual statistical analysis all this information was left out. This was done to focus solely on answering the research questions and not to extend our research beyond the scope of this study. As a matter of fact, the background questionnaire proved to be useless for this research purposes.

Nevertheless, the information gathered might be used for future research (e.g. Did male and female respondents exhibit different style or strategy preferences?).

The third limitation of the study pertains to the translated version of both questionnaires that we used with the beginning level students to eliminate the language problems. As Oller puts it "Successful translation of items requires maintaining roughly the same style level, the same frequency of usage of vocabulary and idioms, comparable phrasing and reference complexities...in some cases this simply cannot be done" (as cited in Ellison, in Reid, 1995, p.22). In fact we encountered numerous instances when an exact equivalent of a word or phrase could not be found in Armenian. Besides, as is maintained in the relevant literature, translated versions of questionnaires need to undergo regular procedures of validation and reliability checks, e.g. back translation.

There is one general limitation to the type of studies where uniform questionnaires are being applied with subjects of different culture and language background. Since questionnaires that establish reliability and validity for native speakers are not always the same in cases of non-native speakers.

Some psychological factors of samples also constitute a typical limitation, while self-reporting questionnaires to a great extent depend on the respondents' willingness to reveal themselves fully. Besides, they usually tend to choose answers that they deem would be more desirable for instructors. However, we believe that, in our case, the anonymity of the questionnaires was to a great extent a guard against this threat.

Another limitation is that the subjects of the study are all university students who do not represent the Armenian population as a whole, as they are an intellectual elite group and may well respond differently from working class people.

Potential Threats to Internal Validity of the Study

Two potential threats to the internal validity of our study may be observed. First, taking into consideration that the learners' language proficiency level varied from beginning to advanced, and that the learners attended educational institutions with different learning environments, we assume that the internal validity of the study could be damaged. To be more precise, although the educational institutions involved in this study were universities, their learning environments were quite different from each other: journalism was taught at a private university, agriculture, engineering, and economics - at state universities, while AUA is a unique private educational institution in Armenia that offers graduate programs only with the language of instruction being English. Thus, the students of all the involved universities except AUA were undergraduates, and the concepts of learning styles and strategies were new to them. The AUA students, however, may have been familiar with these concepts

before completing the questionnaires. Moreover, these latter learners had taken TOEFL exams to enroll in the IEP program at AUA and, where they may have extensively used such compensation strategies as guessing intelligently, coining new words, using synonyms or circumlocution etc. To guard against this threat, we first excluded from our study such factors, as the learners' language proficiency level and major. Next, we controlled the variables operationalized in this study by involving only learners of academic programs. Finally, we introduced the concepts of learning styles and strategies prior to the distribution of the questionnaires. Moreover, we provided the beginners with both the original and translated versions of the SAS and SILL questionnaires. The researchers willingly helped students who needed clarification during the completion of the questionnaires.

The second potential threat to the internal validity of the study was the fact that, despite the comprehensive explanations provided by the teacher, the respondents might have presumed that their answers could somehow affect their grades. To guard against this threat, before distributing the questionnaires, the researchers clarified the purpose of the research, emphasizing the anonymity of the questionnaires and the fact that they could withdraw themselves from the study at any time. What is more, to eliminate this problem, the class teachers were not present during the completion of the questionnaires.

Potential Threats to External Validity of the Study

We realized that the external validity of the study would be damaged if we considered the learning styles and strategies of only one or two institutions, i.e. the results of the study would not be generalizable to the population of Armenian university students as a whole. Therefore, to guard against potential threats to the external validity of this piece of research, we involved five major institutions of higher education in the study: one private and three state universities that offer BA and MA degrees, and another private institution with a unique

learning environment that offers MA degrees only. Therefore, with 95% confidence we claim that the results of the study are generalizable for the Armenian population of university students as a whole.

However, we do realize that the findings of this study could have been even more precise had we involved more than five universities, offering both undergraduate and graduate programs.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

This study set out to discover the overall learning style or learning styles of Armenian university learners as well as to investigate the relationship between the learning styles and language learning strategy choice.

The results of the study were consistent with the findings of the previous research in the field (Green, 1991; Green and Oxford, 1993; Touba, 1992; Wen and Johnson, 1991; Chang, 1990; Oh, 1992, etc), i.e., there is a direct and statistically significant relationship between the learners' ethnicity and strategy use. Consistency is also observed between the findings of the previous research, (e.g. Reid, 1995, Harshbarger et al., 1986; Willing, 1998, as cited in Oxford, 1996), and the findings of this study in connection with the overall learning style(s) of the culture and the language learning strategy choice.

The results of the study revealed that Armenian university learners show a strong preference for global, closure-oriented and extroverted styles. The study also showed that global learners are high users of metacognitive - indirect and compensation - direct strategies, whereas closure-oriented and extroverted learners prefer metacognitive - indirect strategies rather than memory, cognitive, compensation, social and affective strategies. However, overall strategy use of Armenian students, regardless of their learning style preferences, is medium level, i.e. only moderately active. This means that, although Armenian university learners are aware of using learning strategies (no low strategy users were observed in the study), they are to some extent limited in their strategy use.

Thus, based on Oxford's (1990) claim that direct and indirect strategies mutually support each other, and they work closely with each other for the best possible outcome, and considering the fact that Armenian learners' strategy use is limited to some extent, it is highly recommended that EFL teachers begin to introduce and elucidate the concepts and the importance of learning styles and language learning strategies in foreign language learning to

raise students' awareness of their language learning "tools" by providing them with an inventory of direct and indirect learning strategies, and in the long run, to get the learners actively involved in the learning process, taking more responsibility on their part, eventually leading to improved performance. Teachers also need to plan learning activities that require a use of new strategies by their students.

The findings of this research brought to light some feasible ways to further investigate a number of aspects of this study. Since this is the first large-scale research study, encompassing five major institutions of higher education, that has been conducted in Armenia, it can be considered a starting point with certain implications for future research.

First, as mentioned above, the same study can be extended with the use of the information that we obtained but found inapplicable for the current study. This will help to reveal whether learning styles and strategies of Armenian learners show any dependence of age, sex, academic major, and language ability level. However, this would require a larger number of samples to ensure at least thirty representatives for each variable (i.e. thirty men to thirty women, thirty people of each language proficiency level etc.).

It would also be interesting to investigate whether there is a difference between the strategy choice of male and female learners of the same learning style. In other words, once proved that male and female learners of the same learning style share the same strategy groups, it would be interesting to see within each strategy group, which particular strategies they show preference(s) for.

A continuation of our study may be the administration of the same questionnaires with the same groups for the second time later during the course. This can show whether after becoming aware of different learning styles and strategies students have changed their approach and stretched their strategy use beyond their comfort levels.

When made aware of stylistic and strategic variability of their students and in order to accommodate to this diversity, instructors will have to determine their own preferences. Thus another direction for future research may be the identification of teachers' learning styles and strategies. One possibility is administering the questionnaires among the teachers along with the students and comparing the results. This will be necessary to possibly eliminate a mismatch in teacher-student classroom preferences, which could enhance the learning process.

Eventually, to ensure practical application of our findings a separate study is needed to see what adjustments can be made in a typical English language curriculum in Armenian university classes to meet the stylistic and strategic preferences of students. Although the results of this study identified the strategy group or groups driven by each learning style, there is still a need to identify which strategies within the identified strategy groups are used by Armenian learners in particular. That is, it would be worth investigating which particular strategies within each strategy group are favored by the representatives of global, closure-oriented and extroverted learners. The identification of these strategies could eventually lead to including them in the curriculum and training students, since numerous research findings (as cited in Oxford, 1990; Oxford, 1996, O' Malley and Chamot, 1990)) resulted in strong claims that strategy instruction can facilitate students' learning process. Since Armenians are conscious learners (Gasparyan and Harutyunyan, 2001) they would like to know how to cope with difficulties encountered in the learning process. As Ellis (1997) states "learning strategies are typically problem-oriented" (p. 77), and instruction in them can help learners face difficulties in different areas of language learning.

The study strongly recommends that learners' personality, along with their style and strategy preferences, be considered in the second language classroom, since this can result in better performance on the part of the learners.

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STYLE ANALYSIS SURVEY (SAS):*Assessing Your Own Learning And Working Styles**Rebecca Oxford (1993)*

Purpose:

The SAS is designed to assess your general approach to learning and working. It does not predict your behavior in every instance, but it is a clear indication of your overall style preferences.

Instructions:

For each item circle the response that represents your approach. Complete all items. There are five major activities representing five different aspects of your learning and working style. At the end you will find a self-scoring key and an interpretation of the results.

Timing:

It generally takes about 30 minutes to complete the SAS. Do not spend too much time on any item. Indicate your immediate response and move on to the next item.

0 = Never

1 = Sometimes

2 = Very Often

3 = Always

ACTIVITY 1: HOW I USE MY PHYSICAL SENSES TO STUDY OR WORK

- | | | | | | |
|-----|---|---|---|---|---|
| 1. | I remember something better if I write it down. | 0 | 1 | 2 | 3 |
| 2. | I take lots of notes. | 0 | 1 | 2 | 3 |
| 3. | I can visualize pictures, numbers, or words in my head. | 0 | 1 | 2 | 3 |
| 4. | I prefer to learn with video or TV more than with other media. | 0 | 1 | 2 | 3 |
| 5. | I underline or highlight the important parts I read. | 0 | 1 | 2 | 3 |
| 6. | I use color-coding to help me as I learn to work. | 0 | 1 | 2 | 3 |
| 7. | I need written directions for tasks. | 0 | 1 | 2 | 3 |
| 8. | I get distracted by background noises. | 0 | 1 | 2 | 3 |
| 9. | I have to look at people to understand what they say. | 0 | 1 | 2 | 3 |
| 10. | I am more comfortable when the walls where I study or work have posters and pictures. | 0 | 1 | 2 | 3 |
| 11. | I remember things better if I discuss them out loud. | 0 | 1 | 2 | 3 |

12.	I prefer to learn by listening to a lecture or a tape, rather than by reading.	0	1	2	3
13.	I need oral directions for tasks.	0	1	2	3
14.	Background sounds help me think.	0	1	2	3
15.	I like to listen to music when I study or work.	0	1	2	3
16.	I can easily understand what people say even if I can't see them.	0	1	2	3
17.	I remember better what people say than what they look like.	0	1	2	3
18.	I easily remember jokes I hear.	0	1	2	3
19.	I can identify people by their voices.	0	1	2	3
20.	When I turn on the TV, I listen to the sound more than watching the screen.	0	1	2	3
21.	I'd rather just start doing things rather than pay attention to directions.	0	1	2	3
22.	I need frequent breaks when I work or study.	0	1	2	3
23.	I move my lips when I read silently.	0	1	2	3
24.	I avoid sitting at a desk when I don't have to.	0	1	2	3
25.	I get nervous when I sit still too long.	0	1	2	3
26.	I think better when I can move around.	0	1	2	3
27.	Manipulating objects helps me to remember.	0	1	2	3
28.	I enjoy building or making things.	0	1	2	3
29.	I like a lot of physical activities.	0	1	2	3
30.	I enjoy collecting cards, stamps, coins, or other things.	0	1	2	3

ACTIVITY 2: HOW I DEAL WITH OTHER PEOPLE.

1.	I prefer to work or study with others.	0	1	2	3
2.	I make new friends easily.	0	1	2	3
3.	I like to be in groups of people.	0	1	2	3
4.	It is easy for me to talk to strangers.	0	1	2	3
5.	I keep up with personal news about other people.	0	1	2	3
6.	I like to stay late at parties.	0	1	2	3
7.	Interactions with new people give me energy.	0	1	2	3
8.	I remember people's names easily.	0	1	2	3
9.	I have many friends and acquaintances.	0	1	2	3
10.	Wherever I go, I develop personal contacts.	0	1	2	3
11.	I prefer to work or study alone.	0	1	2	3
12.	I am rather shy.	0	1	2	3
13.	I prefer individual hobbies and sports.	0	1	2	3
14.	It is hard for most people to get to know me.	0	1	2	3
15.	People view me as more detached than sociable.	0	1	2	3
16.	In a large group, I tend to keep silent.	0	1	2	3
17.	Gatherings with lots of people tend to stress me.	0	1	2	3
18.	I get nervous when dealing with new people.	0	1	2	3
19.	I avoid parties if I can.	0	1	2	3
20.	Remembering names is difficult for me.	0	1	2	3

ACTIVITY 3: HOW I HANDLE POSSIBILITIES.

1.	I have a vivid imagination.	0	1	2	3
2.	I like to think of lots of new ideas.	0	1	2	3
3.	I can think of many different solutions to a problem.	0	1	2	3
4.	I like multiple possibilities and options.	0	1	2	3
5.	I enjoy considering the future events.	0	1	2	3
6.	Following a step-by-step procedure bores me.	0	1	2	3
7.	I like to discover things rather than have everything explained.	0	1	2	3
8.	I consider myself original.	0	1	2	3
9.	I am an ingenious person.	0	1	2	3
10.	It feels fine if the teacher or boss changes the plan.	0	1	2	3
11.	I am proud of being practical.	0	1	2	3
12.	I behave in a down-to-earth way.	0	1	2	3
13.	I am attracted to sensible people.	0	1	2	3
14.	I prefer realism instead of new, untested ideas.	0	1	2	3
15.	I prefer things presented in a step-by-step way.	0	1	2	3
16.	I want a class or work session to follow a clear plan.	0	1	2	3
17.	I like concrete facts, not speculation.	0	1	2	3
18.	Finding hidden meanings is frustrating or irrelevant to me.	0	1	2	3
19.	I prefer to avoid too many options.	0	1	2	3
20.	I feel it is useless for me to think about the future.	0	1	2	3

ACTIVITY 4: HOW I APPROACH TASKS.

1.	I reach decisions quickly.	0	1	2	3
2.	I am an organized person.	0	1	2	3
3.	I make lists of things I need to do.	0	1	2	3
4.	I consult my lists in order to get things done.	0	1	2	3
5.	Messy, unorganized environments make me nervous.	0	1	2	3
6.	I start tasks on time or early.	0	1	2	3
7.	I get places on time.	0	1	2	3
8.	Deadlines help me organize work.	0	1	2	3
9.	I enjoy a sense of structure.	0	1	2	3
10.	I follow through with what I have planned.	0	1	2	3
11.	I am a spontaneous person.	0	1	2	3
12.	I like to just let things happen, not plan them.	0	1	2	3
13.	I feel uncomfortable with a lot of structure.	0	1	2	3
14.	I put off decisions as long as I can.	0	1	2	3
15.	I have a messy desk or room.	0	1	2	3
16.	I believe deadlines are artificial or useless.	0	1	2	3
17.	I keep an open mind about things.	0	1	2	3
18.	I believe that enjoying myself is the most important thing.	0	1	2	3
19.	Lists of tasks make me feel tired or upset.	0	1	2	3
20.	I feel fine about changing my mind.	0	1	2	3

ACTIVITY 5: HOW I DEAL WITH IDEAS.

1.	I prefer simple answers rather than a lot of explanations.	0	1	2	3
2.	Too many details tend to confuse me.	0	1	2	3
3.	I ignore details that do not seem relevant.	0	1	2	3
4.	It is easy for me to see the overall plan or big picture.	0	1	2	3
5.	I can summarize information rather easily.	0	1	2	3
6.	It is easy for me to paraphrase what other people say.	0	1	2	3
7.	I see the main point very quickly.	0	1	2	3
8.	I am satisfied with knowing the major ideas without the details.	0	1	2	3
9.	I can pull together (synthesize) things easily.	0	1	2	3
10.	When I make an outline, I write down only the key points.	0	1	2	3
11.	I prefer detailed answers instead of short answers.	0	1	2	3
12.	It is difficult for me to summarize detailed information.	0	1	2	3
13.	I focus on specific facts or information.	0	1	2	3
14.	I enjoy breaking general ideas down into smaller pieces.	0	1	2	3
15.	I prefer looking for differences rather than similarities.	0	1	2	3
16.	I use logical analysis to solve problems.	0	1	2	3
17.	My written outlines contain many details.	0	1	2	3
18.	I become nervous when only the main ideas are presented.	0	1	2	3
19.	I focus on the details rather than the big picture.	0	1	2	3
20.	When I tell a story or explain something, it takes a long time.	0	1	2	3

SCORING SHEET

Now that you have finished Activities 1 through 5, find your score below.

ACTIVITY 1: HOW I USE MY PHYSICAL SENSES TO STUDY OR WORK

Add your score for items 1-10; write it here: _____ (visual)

Add your score for items 11-20; write it here: _____ (auditory)

Add your score for items 21-30; write it here: _____ (hands-on)

Circle the score that is the largest. If two scores are within 2 points of each other, circle them both. If all three scores are within 2 points of each other, circle all three. The circle represents your preferred sense(s) for learning and working.

ACTIVITY 2: HOW I DEAL WITH OTHER PEOPLE.

Add your score for items 1-10; write it here: _____ (extroverted)

Add your score for items 11-20; write it here: _____ (introverted)

Circle the larger score. If two scores are within 2 points of each other, circle them both. The circle represents your preferred way of dealing with other people.

ACTIVITY 3: HOW I HANDLE POSSIBILITIES.

Add your score for items 1-10; write it here: _____ (intuitive)

Add your score for items 11-20; write it here: _____ (concrete sequential)

Circle the larger score. If two scores are within 2 points of each other, circle them both. The circle represents your preferred way of handling possibilities.

4: HOW I APPROACH TASKS.

Add your score for items 1-10; write it here: _____ (closure-oriented)

Add your score for items 11-20; write it here: _____ (open)

Circle the larger score. If two scores are within 2 points of each other, circle them both. The circle represents your preferred approach to tasks and decisions.

5: HOW I DEAL WITH IDEAS.

Add your score for items 1-10; write it here: _____ (global)

Add your score for items 11-20; write it here: _____ (analytic)

Circle the larger score. If two scores are within 2 points of each other, circle them both. The circle represents your preferred way to deal with ideas.

ACTIVITY 1: HOW I USE MY PHYSICAL SENSES TO STUDY OR WORK

In class: If you are a visual person, you rely on the sense of sight, and you learn best through visual means (books, video). If you are an auditory person, you prefer listening and speaking activities (discussions, debates, audio tapes, role-plays, lectures). If you are a hands-on person, you benefit from doing projects, working with objects, and moving around the room (games, building models, conducting experiments).

On the job: If you are visual person, you rely most on your sense of sight to gain knowledge or understanding (manuals, graphics). If you are an auditory person, you prefer to listen to information (meetings, dictation tapes) rather than read it. If you are a hands-on person, you benefit most from getting involved in the information gathering process (computers, research) or from doing projects, building things, and working with objects.

Anywhere: If two or all three of these senses are strong, you are flexible enough to enjoy a wide variety of activities.

ACTIVITY 2: HOW I DEAL WITH OTHER PEOPLE.

In class: If you are extroverted, you enjoy a wide range of social, interactive learning tasks (games, conversations, discussions, debates, role-plays, simulations). If you are introverted, you like to do more independent work (studying or reading by yourself or learning with the computer) or enjoy working with one other person you know well.

On the job: If you are extroverted, you enjoy a wide range of social and interactive tasks (meetings, discussions, teamwork). If you are introverted, you like to do work independently (computers, individual projects) or enjoy working with one other person you know well.

Anywhere: If your scores are close, then you are balanced in the sense that you work easily with others and by yourself.

ACTIVITY 3: HOW I HANDLE POSSIBILITIES.

In class: If you are intuitive, you are future-oriented, able to seek out the major principles of the topic, like to speculate about possibilities, enjoy abstract thinking, and avoid step-by-step instruction. If your preference is concrete sequential, you are present-oriented and prefer one-step-at-a-time activities, and want to know where you are going in your learning at every moment.

On the job: If you are intuitive, you like to plan ahead for creative, new directions (designing, overall planning) in a non-linear, flexible way. If you prefer a concrete sequential approach, you want people to be able to depend on your abilities, are highly organized, prefer step-by-step work procedures, and like control.

Anywhere: If the two scores are close, then you can switch modes rather easily from intuitive to concrete sequential.

ACTIVITY 4: HOW I APPROACH TASKS.

In class: If your score is higher for closure, you focus carefully on all learning tasks, meet deadlines, plan ahead for assignments, and want explicit directions. If openness has a higher score, you enjoy discovery learning (in which you pick up information in an unstructured way) and prefer to relax and enjoy your learning without concern for deadlines or rules.

On the job: If your higher score is closure, this means your work habits are very structured and serious, and you are oriented toward getting the job done on time or early. If your score is higher for openness, you are more relaxed and unstructured in your approach to work, and you don't care much about deadlines or regulations.

Anywhere: If two scores are close, you have a balance between closure and openness: you enjoy the freedom of limited structure and can still get the task done before the deadline without stress.

ACTIVITY 5: HOW I DEAL WITH IDEAS.

In class: If you are global, you enjoy getting the main idea, guessing meanings, and communicating even if you don't know all the words or concepts. If you are analytic, you focus more on details, logical analysis, and contrasts.

On the job: If you are global, you focus at work on the key points and are not as concerned about details. If you are analytic, you are a "detail person" who is known for being logical, and you are not as skilled with seeing the big picture right away.

Anywhere: If the two scores are close, you easily move from global thinking to analytic thinking and back again.

TIPS

Each style preference (within a given activity above) offers significant strengths in learning and working. Recognize your strengths and apply them often. Also, enhance your learning and working power by being aware of the style areas that you do not use and by developing them. Tasks that do not seem quite as suited to your style preferences will help you stretch beyond your ordinary "comfort zones" and expand your learning and working potential.

For example, if you are a highly global person, you might need to learn to use analysis and logic in order to work or learn more effectively. If you are an extremely analytic person, you might be missing out on some useful global characteristics, like getting the main idea quickly, and you can develop such qualities in yourself through practice. You won't lose your basic strengths by trying some things new; you will simply develop another side of yourself that is likely to be very helpful.

If you aren't sure how to attempt new behaviors that go beyond your favored style, then ask your colleagues, friends, or teachers to give you a hand. Talk with someone who has a different style from yours, and see how that person does it.

Improve your learning or working situation by stretching your style!

Ոճերի վերլուծությանը նվիրված հարցաշար

Գնահատեք ձեզ առանձնահատուկ ուսումնական և աշխատանքային ոճերը

Ուեբեքա Օբսիդորդ (1993)

Հարցման նպատակը

Հարցաշարի նպատակն է գնահատել ձեզ հատուկ, ընդհանուր մոտեցումը ուսումնառությանն ու աշխատելուն: Հարցաշարը նպատակ չունի բացահայտելու ձեր վարկելակերպը բոլոր իրավիճակներում, սակայն ցույց է տալիս ձեր նախընտրած ոճը ընդհանուր առմամբ:

Կատարման կարգը

Յուրաքանչյուր կետի համար կլորակի մեջ առեք այն պատասխանը, որն արտացոլում է ձեր մոտեցումը: Լրացրեք բոլոր կետերը: Տրված են հինգ հիմնական առաջադրանքներ, որոնք արտահայտում են ուսումնառության և աշխատելու հինգ տարբեր ոճական տեսակները: Վերջում կարող եք տեսնել ինքնագնահատման կարգը և արդյունքների մեկնաբանումը:

Տևողությունը

Հարցաշարը լրացնելը սովորաբար զբաղեցնում է 30 րոպե: Ամեն կետին պատասխանելու համար չափից ավելին ժամանակ մի ծախսեք: Նշեք անմիջապես առաջացած պատասխանի տարբերակը և չարժվեք առաջ:

0 = երբեք

1 = երբեմն

2 = շատ հաճախ

3 = միշտ

Գործողություն 1. Սովերելիս կամ աշխատելիս ինչպես են ես օգտագործում իմ ֆիզիկական զգայարանները					
31.	Ես ավելի լավ եմ հիշում երբ գրի եմ առնում նյութը:	0	1	2	3
32.	Ես շատ եմ գրառումներ անում:	0	1	2	3
33.	Մտքիս մեջ ես տեսնում եմ նկարների, թվերի և բառերի պատկերները:	0	1	2	3
34.	Ես ամենից շատ գերադասում եմ սովորել վիդեո և հեռուստատեսության միջոցով:	0	1	2	3
35.	Ընթերցելից ես ընդգծում կամ որևէ այլ կերպ նշում եմ կարևոր մասերը:	0	1	2	3
36.	Սովորելիս կամ աշխատելիս ես տարբեր գույներով նշաններ եմ անում/ում:	0	1	2	3

37.	Ինձ անհրաժեշտ են գրավոր ցուցմունքներ առաջադրանքներին:	0	1	2	3
38.	Ինձ խանգարում է արտաքին աղմուկը:	0	1	2	3
39.	Ես պետք է տեսնեմ մարդուն, որպիսզի հասկանամ, թե նա ինչ է ասում:.	0	1	2	3
40.	Ես ինձ ավելի հարմար եմ զգում, երբ սենյակի պատերը, ուր ես սովորում կամ աշխատում եմ, զարդարված են պաստառներով կամ նկարներով:	0	1	2	3
41.	Ես ավելի լավ եմ հիշում նյութը, երբ բարձրաձայն քննարկում եմ այն:	0	1	2	3
42.	Ես նախընտրում եմ սովորել դասախոսություն կամ ձայնագրություն լսելով, քան կարդալով:	0	1	2	3
43.	Ինձ անհրաժեշտ է ստանալ բանավոր ցուցմունքներ առաջադրանքներին:	0	1	2	3
44.	Արտաքին ձայները օգնում են ինձ մտածել:	0	1	2	3
45.	Սովորելիս կամ աշխատելիս ես սիրում եմ երաժշտություն լսել:	0	1	2	3
46.	Ես հեշտությամբ հասկանում եմ, թե ինչ են մարդիկ ասում, նույնիսկ երբ չեմ տեսնում իրենց:	0	1	2	3
47.	Ես ավելի լավ եմ հիշում այն, թե ինչ են մարդիկ ասում, քան իրենց արտաքինը:	0	1	2	3
48.	Ես լավ եմ հիշում լսածս կատակները:	0	1	2	3
49.	Ես կարողանում եմ ճանաչել մարդկանց իրենց ձայնով:	0	1	2	3
50.	Երբ միացնում եմ հեռուստացույցը ավելի շատ լսում եմ, քան նայում էկրանին:	0	1	2	3
51.	Ես գերադասում եմ անմիջապես սկսել առաջադրանքի կատարումը, քան ուշադրություն դարձնել ցուցմունքներին:	0	1	2	3
52.	Սովորելիս կամ աշխատելիս ինձ հարկավոր են հաճախակի ընդմիջումներ:	0	1	2	3
53.	Լուռ կարդալիս, ես շարժում եմ շրթունքներս:	0	1	2	3
54.	Ես գերադասում եմ չնստել սեղանի մոտ, երբ դրա անհրաժեշտությունը չկա:	0	1	2	3
55.	Երկար անշարժ նստելիս, ես նյարդայնանում եմ:	0	1	2	3
56.	Ես ավելի լավ եմ մտածում, երբ քայլում եմ:	0	1	2	3
57.	Երբ ձեռքերով իրեր եմ շարժում, ավելի լավ եմ նյութը հիշում:	0	1	2	3
58.	Ինձ դուր է գալիս որևէ բան կառուցել կամ պատրաստել:	0	1	2	3
59.	Ես սիրում եմ ակտիվ ֆիզիկական գործողություններ կատարել:	0	1	2	3
60.	Ինձ դուր է գալիս բացիկներ, նամականիշեր, մանրադրամ կամ այլ իրեր հավաքել:	0	1	2	3

Գործողություն 2. Ինչպես եմ համակերպվում այլ մարդկանց հետ:					
21.	Ես նախընտրում եմ աշխատել կամ սովորել ուրիշների հետ միասին:	0	1	2	3
22.	Ես հեշտորեն եմ նոր ընկերներ ձեռք բերում:	0	1	2	3
23.	Ես սիրում եմ մարդաշատ միջավայրում գտնվել:	0	1	2	3
24.	Ինձ համար դժվար չէ խոսել անծանոթների հետ:	0	1	2	3
25.	Ես միշտ տեղյակ եմ ուրիշների անձնական նորությունների մասին:	0	1	2	3
26.	Ես սիրում եմ մինչև ուշ ժամերը մնալ երեկույթներին:	0	1	2	3
27.	Այլ մարդկանց հետ հարաբերությունները ինձ լցնում են էներգիայով:	0	1	2	3
28.	Ես հեշտորեն եմ հիշում մարդկանց անունները:	0	1	2	3
29.	Ես շատ ընկերներ ու ծանոթներ ունեմ:	0	1	2	3
30.	Ուր էլ որ գնում եմ, անձնական ծանոթություններ եմ ձեռք բերում:	0	1	2	3
31.	Ես գերադասում եմ միայնակ աշխատել կամ սովորել:	0	1	2	3
32.	Ես բավականին ամաչկոտ անձնավորություն եմ:	0	1	2	3
33.	Ես նախընտրում եմ անհատական հոբբիներ կամ սպորտաձևեր:	0	1	2	3
34.	Ուրիշների համար սովորաբար հեշտ չէ ինձ ճանաչել:	0	1	2	3
35.	Մարդիկ համարում են ինձ ավելի շատ ինքնամոտի, քան մարդամոտ անձ:	0	1	2	3
36.	Մարդկանց մեծ խմբերում գտնվելիս, ես նախընտրում եմ լուռ մնալ:	0	1	2	3
37.	Մարդաշատ միջավայրը ինձ սովորաբար ճնշում է:	0	1	2	3
38.	Նոր մարդկանց հետ հարաբերությունները ինձ նյարդայնացնում են:	0	1	2	3
39.	Հնարավորության դեպքում ես խուսփում եմ երեկույթների գնալ:	0	1	2	3
40.	Ինձ համար դժվար է հիշել մարդկանց անուններ:	0	1	2	3

Գործողություն 3. Ինչպես եմ ես կառավարում հնարավորությունները:					
21.	Ես վառ երևակայություն ունեմ:	0	1	2	3
22.	Ինձ դուր է գալիս մտքումս ծանրութեթև անել բազմաթիվ նոր գաղափարներ:	0	1	2	3
23.	Ես կարող եմ մեկ խնդրի համար մի քանի լուծման տարբերակներ գտնել:	0	1	2	3
24.	Ես սիրում ձեռքիս տակ ուննալ տարբեր տեսակի հնարավորություններ և տարբերակներ:	0	1	2	3
25.	Ինձ դուր է գալիս մտածել ապագա իրադարձությունների մասին:	0	1	2	3
26.	Աստիճանաբար զարգացող գործընթացները ինձ ձանձրացնում են:	0	1	2	3

27.	Ես գերադասում եմ ինքնուրույ որևէ եզրահանգության գալ, քան երբ ինձ ամեն բան բացատրում է:	0	1	2	3
28.	Ես ինձ համարում եմ յուրատեսակ մարդ:	0	1	2	3
29.	Ես հնարագետ մարդ եմ:	0	1	2	3
30.	Ինձ մոտ որևէ խնդիր չի առաջանում, երբ ուսուցիչս կամ դեկավարս պլաններում փոփոխություն է մտցնում:				
31.	Ես հպարտանում իմ պրակտիկ մարդ լինելով:	0	1	2	3
32.	Ես պրակտիկ վարվելակերպ ունեմ:	0	1	2	3
33.	Ինձ դուր են գալիս ողջամիտ մարդիկ:	0	1	2	3
34.	Նոր, չփորձված գաղափարներին ես գերադասում եմ իրատեսությունը:	0	1	2	3
35.	Ես գերադասում եմ, որ նյութը քայլ առ քայլ ներկայացվի:	0	1	2	3
36.	Ես ցանկանում եմ, որ դասաժամը կամ աշխատանքը հստակ պլանավորված լինեն:	0	1	2	3
37.	Ես գերադասում եմ հստակ փաստեր, այլ ոչ ենթադրություններ:	0	1	2	3
38.	Որևէ բանի մեջ թաքնված իմաստը փնտերել ես համարում եմ ձանձրեցնող և անիմաստ զբաղմունք:	0	1	2	3
39.	Ես գերադասում եմ խուսափել չափազանց շատ տարբերակներից:	0	1	2	3
40.	Ես համարում եմ, որ իմաստ չունի մտածել ապագայի մասին:	0	1	2	3

Գործողություն 4. Ինչպես եմ ես վերաբերվում առաջադրանքներ կատարելուն					
21.	Ես արագ եմ որոշումներս կայացնում:	0	1	2	3
22.	Ես կազմակերպված մարդ եմ:	0	1	2	3
23.	Ես կազմում եմ իմ անելիքների ցուցակը:	0	1	2	3
24.	Որևէ բան անելիս, ես նախ ստուգում եմ իմ անելիքների ցուցակը:	0	1	2	3
25.	Խառը, վատ կազմակերպված միջավայրն ինձ նյարդայնացնում է:	0	1	2	3
26.	Ես սկսում եմ կատարել առաջադրանքներս ճիշտ ժամանակին կամ ժամանակից շուտ:	0	1	2	3
27.	Ես երբեք չեմ ուշանում:	0	1	2	3
28.	Ժամկետի առկայությունը ինձ օգնում է լավ կազմակերպել աշխատանքս:	0	1	2	3
29.	Ինձ դուր է գալիս կազմակերպվածության ունակությունը:	0	1	2	3
30.	Ես միշտ հետևում եմ իմ կազմած ծրագրերին:				
31.	Ես ինքնաբեր և տարերային մարդ եմ:	0	1	2	3
32.	Ես սիրում եմ, երբ իրադարձությունները իր հունով են պատահում, այլ ոչ թե ծրագրավորում եմ դրանք:	0	1	2	3
33.	Ես ինձ ազատ չեմ զգում, երբ ամեն բան հստակ կազմակերպված է լինում:				

34.	Որոշումների կայացումը ես հետաձգում եմ որքան որ հնարավոր է:	0	1	2	3
35.	Իմ սենյակը կամ գրասեղանը միշտ խառնված է:	0	1	2	3
36.	Ես համարում եմ, որ ժամկետները արհեստական և անիմաստ բնույթ ունեն:	0	1	2	3
37.	Ես լայն հայացքների տեր մարդ եմ:	0	1	2	3
38.	Ես համարում եմ, որ հաճույք ստանալն ամենից կարևոր բանն է կյանքում:	0	1	2	3
39.	Առաջադրանքների ցուցակները ինձ ձանձրեցնում և տխրեցնում են:	0	1	2	3
40.	Ես խնդիր չեմ տեսնում որոշումները փոխելում մեջ:	0	1	2	3

Գործողություն 5. Ինչպես եմ ես վերաբերվում գաղափարներին:					
21.	Ես գերադասում եմ համառոտ պատասխանները՝ երկար բացատրություններին:	0	1	2	3
22.	Չափազանց մանրամասն տվյալները ինձ մոտ սովորաբար խառնաշփոթ են առաջացնում:	0	1	2	3
23.	Ես անտեսում եմ այն տվյալները, որոնք անիմաստ եմ համարում:	0	1	2	3
24.	Ինձ համար հեշտ է պատկերացնել պլանը ամբողջությամբ կամ տեսնել որևէ լայնածավալ պատկեր:	0	1	2	3
25.	Ինձ համար շատ հեշտ է ամփոփ կերպով ներկայացնել որևէ տեղեկություն:	0	1	2	3
26.	Ինձ համար հեշտ վերաձևակերպել մեկ ուրիշի ասածը:	0	1	2	3
27.	Ես շատ արագ եմ ընթերցում հիմնական միտքը:	0	1	2	3
28.	Ինձ համար բավական է իմանալ գլխավոր միտքը՝ առանց մանրամասնությունների:	0	1	2	3
29.	Ես կարող եմ հեշտորեն իրար միացնել առանձին մասերը:	0	1	2	3
30.	Երբ ես ամփոփում եմ որևէ բան, ապա գրի եմ առնում միայն կարևոր մտքերը:	0	1	2	3
31.	Համառոտ պատասխաններին ես նախընտրում եմ մանրամասնածները:	0	1	2	3
32.	Ինձ համար դժվար է ամփոփ կերպով ներկայացնել շատ մանրամասն տեղեկություն:	0	1	2	3
33.	Ես կենտրոնանում եմ հստակ փաստեր կամ տվյալների վրա:	0	1	2	3
34.	Ինձ դուր է գալիս բաժանել հիմնական գաղափարը ավելի փոքր մասերի:	0	1	2	3
35.	Ես գերադասում եմ փնտրել տարբերությունները, այլ ոչ թե ընդհանրություններ:	0	1	2	3
36.	Որևէ խնդիր լուծելիս ես կիրառում եմ տրամաբանական վերլուծություն:	0	1	2	3
37.	Իմ ամփոփագրերը պարունակում եմ բազմաթիվ մանրամասնություններ:	0	1	2	3
38.	Ես նյարդայնանում եմ, երբ ինձ ներկայացվում է միմիայն	0	1	2	3

	հիմնական գաղափարը:				
39.	Ես կենտրոնանում եմ մանրամասնությունների, այլ ոչ թե ամբողջական պատկերի վրա:	0	1	2	3
40.	Երբ ես որևէ բան պատմում կամ բացատրում եմ, դա շատ ժամանակ է խլում:	0	1	2	3

Գնահատման կարգը

Այժմ, երբ դուք ավարտեցիք 1-5 Գործողությունների կատարումը, հաշվեք ձեր գնահատականը:

Գործողություն 1. Սովերելիս կամ աշխատելիս ինչպես եմ ես օգտագործում իմ ֆիզիկական օրհն զգայարանները:

Գտեք 1-10 կետերի գնահատականների գումարը; գրեք այն այստեղ _____
(տեսողական)

Գտեք 11-20 կետերի գնահատականների գումարը; գրեք այն այստեղ _____
(լսողական)

Գտեք 21-30 կետերի գնահատականների գումարը; գրեք այն այստեղ _____
(ֆիզիկական)

Կլորակի մեջ առեք ամենից բարձր գնահատականը: Այն դեպքում, երբ երկու գնահատական միմյանցից տարբերվում են երկու միավորով, երկուսն էլ կլորակի մեջ առեք: Նշված գնահատականն էլ ցույց է տալիս սովորելու կամ աշխատելու ձեր նախընտրած ոճը (ոճերը):

Գործողություն 2. Ինչպես եմ համակերպվում այլ մարդկանց հետ:

Գտեք 1-10 կետերի գնահատականների գումարը; գրեք այն այստեղ _____
(էքստրովերտ)

Գտեք 11-20 կետերի գնահատականների գումարը; գրեք այն այստեղ _____
(ինտրավերտ)

Կլորակի մեջ առեք ամենից բարձր գնահատականը: Այն դեպքում, երբ երկու գնահատական միմյանցից տարբերվում են երկու միավորով երկուսն էլ կլորակի մեջ առեք: Նշված գնահատականն էլ ցույց է տալիս մարդկանց հետ համակերպվելու ձեր նախընտրած ձևը:

Գործողություն 3: Ինչպես եմ ես կառավարում հնարավորությունները:

Գտեք 1-10 կետերի գնահատականների գումարը; գրեք այն այստեղ _____
(ինտուիտիվ)

Գտեք 11-20 կետերի գնահատականների գումարը; գրեք այն այստեղ _____
(հստակ հետևողական)

Կլորակի մեջ առեք ամենից բարձր գնահատականը: Այն դեպքում, երբ երկու գնահատական միմյանցից տարբերվում են երկու միավորով երկուսն էլ կլորակի մեջ առեք: Նշված գնահատականն էլ ցույց է տալիս հնարավորությունները կառավարելու ձեր նախընտրած ձևը:

Գործողություն 4. Ինչպես եմ ես վերաբերվում առաջադրանքներ կատարելուն

Գտեք 1-10 կետերի գնահատականների գումարը; գրեք այն այստեղ _____
(կարգապահ)

Գտեք 11-20 կետերի գնահատականների գումարը; գրեք այն այստեղ _____
(ազատ)

Կլորակի մեջ առեք ամենից բարձր գնահատականը: Այն դեպքում, երբ երկու գնահատական միմյանցից տարբերվում են երկու միավորով երկուսն էլ կլորակի մեջ առեք: Նշված գնահատականն էլ ցույց է տալիս առաջադրանքներ կատարելու և որոշումներ ընդունելու ձեր նախընտրած ձևը:

Գործողություն 5. Ինչպես եմ ես վերաբերվում գաղափարներին:

Գտեք 1-10 կետերի գնահատականների գումարը; գրեք այն այստեղ _____
(գլոբալ)

Գտեք 11-20 կետերի գնահատականների գումարը; գրեք այն այստեղ _____
(վերլուծողական)

Կլորակի մեջ առեք ամենից բարձր գնահատականը: Այն դեպքում, երբ երկու գնահատական միմյանցից տարբերվում են երկու միավորով երկուսն էլ կլորակի մեջ առեք: Նշված գնահատականն էլ ցույց է տալիս գաղափարներին վերաբերվելու ձեր նախընտրած ձևը:

Գործողություն 1. Սովերեյիս կամ աշխատելիս ինչպես են ես օգտագործում իմ ֆիզիկականօին զգայարանները:

Դասասենյակում. Եթե դուք տեսողական անձ եք, դուք վստահում եք ձեր տեսողական զգայարին և ամենից լավ սովորում եք տեսողական միջոցներով (գրքեր, վիդեո): Եթե դուք լսողական անձ եք, ապա նախընտրում եք լսողական կամ խոսակցական գործողություններ (քննարկումներ, բանավեճեր, ձայներիզներ, ներկայացումներ, դասախոսություններ): Եթե դուք ֆիզիկական անձ եք, ապա ձեզ ամենից շատ օգտակար են նախագծեր կատարելը, առարկաների հետ աշխատելը, սենյակով շուրջ շարժվելը (խաղեր, մոդելներ կառուցելը, փորձեր անցկացնել):

Աշխատանքի մեջ. Եթե դուք տեսողական անձ եք, ապա որևէ բան հասկանալու կամ գիտելիք ձեռք բերելու նպատակով դուք ավենից շատ վստահում եք տեսողությանը (ձնարկներ, գծագրեր): Եթե դուք լսողական անձ եք, նոր տեղեկությունը դուք նախընտրում եք լսել (ժողովներ, թելադրություններ, ձայներիզներ), այլ ոչ կարդալ: Եթե դուք ֆիզիկական անձ եք, ձեզ համար ամենից օգտակարն է ներգրավվել տեղեկություն ձեռք բերելու գործընթացում (համակարգիչներ, հետազոտություններ) կամ նախագծեր կատարելը, իրեր պատրաստելը կամ առարկաներով աշխատելը:

Այլ տարբերակներ. Եթե ձեր զգայարաններից երկուսը կամ երեքն էլ ուժեղ են, ապա դուք բավականին ճկուն անձ եք, որպեսզի բավականություն ստանաք բոլոր տեսակի գործողություններից:

Գործողություն 2. Ինչպես են համակերպվում այլ մարդկանց հետ

Դասասենյակում. Եթե դուք էքստրովերտ անձ եք, ձեզ բավականություն են պատճառում տարբեր տեսակի հասարակական, շփողական ուսումնական առաջադրանքներից (խաղեր, գրույցներ, քննարկումներ, բանավեճեր, ներկայացումներ, ընդօրինակումներ): Եթե դուք ինտրովերտ եք, ապա ավելի շատ նախընտրում եք անհատական աշխատանք (սովորել կամ կարդալ ինքնուրույն կամ համակարգչով) կամ ձեզ հաճելի է աշխատել միայն այն ածանց հետ ում շատ լավ եք ճանաչում:

Աշխատանքի մեջ. Եթե դուք էքստրովերտ եք ձեզ բավականություն են պատճառում տարբեր տեսակի հասարակական, շփողական առաջադրանքներ (ժողովներ, քննարկումներ, խմբային աշխատանք): Եթե դուք ինտրովերտ էք, դուք նխընտրում եք ինքնուրույն աշխատել (համակարգիչ, անհատական նախագծեր) կամ ձեզ հաճելի է աշխատել միայն այն ածանց հետ ում շատ լավ եք ճանաչում::

Այլ տարբերակներ. Եթե երկու գնահատականները իրար մոտ են, ապա դուք հավասարակշռված անձ եք, այն իմաստով, որ հավասարապես հեշտ աշխատում եք և՛ ուրիշների հետ, և՛ միայնակ:

Գործողություն 3: Ինչպես եմ ես կառավարում հնարավորությունները:

Ղասասենյակում. Եթե դուք ինտուիտիվ անձ եք, ապա դուք ապագայով ապրող մարդ եք, կարողանում եք գտնել թեմայի հիմնական սկզբունքները, սիրում եք ծանրութեթև անել տարբեր հնարավորություններ, սիրում եք վերացական մտածելակերպ և խուսափում եք քայլ առ քայլ ներկայացվող ցուցմունքներից: Եթե ձեր նախընտրածը հստակ հետևողական ոճն է, ապա դուք ներկայով ապրող անձ եք և գերադասում եք քայլ առ քայլ բացատրվող առաջադրանքները և ձեզ պետք է միշտ իմանալ թե ինչ եք սովորելու:

Աշխատանքի մեջ. Եթե դուք ինտուիտիվ անձ եք, դուք սիրում եք ծրագրեր կազմել նոր և ստեղծագործական ուղղություններով (դիզայն, ընդհանուր պլանավորում) ոչ կանոնավոր, ճկուն կերպով: Եթե դուք նախընտրում եք հստակ հետևողական մոտեցում, ապա դուք ցանկանում եք, որ մարդիկ կախված լինեն ձեր կարողություններից, դուք լավ կազմակերպված մարդ եք, նախընտրում եք աստիճանաբար զարգացող աշխատանք և սիրում եք հսկողություն:

Այլ տարբերակներ. Եթե երկու գնահատականները իրար մոտ են, ապա դուք կարողանում եք շատ հեշտ փոփոխել հստակ հետևողական և ինտուիտիվ ոճերը:

Գործողություն 4. Ինչպես եմ ես վերաբերվում առաջադրություններ կատարելուն

Ղասասենյակում. Եթե ձեր ավելի բարձր գնահատականը կարգապահության համար է, ապա դուք ավելի ուշադիր եք վերաբերվում առաջադրանքներին, ժամկետները չեք խախտում, նախապես եք պլանավորում առաջադրանքների կատարումը և ձեզ պետք են մանրամասն ցուցմունքներ: Եթե ազատության համար գնահատականը ավելի բարձր է, ձեզ ավելի դուր է գալիս սովորել բացահայտելով փաստերը (երբ դուք նոր տեղեկությունը ըմբռնում եք չկանոնավորված ձևով) և գերադասում եք առանց լարվելու հաճույք ստանալ սովորելուց՝ չհոգալով ժամկետների և կանոնների մասին:

Աշխատանքի մեջ. Եթե դուք ավելի բարձր գնահատական եք ստացել կարգապահության համար դա նշանակում է, որ դուք լավ կազմակերպված և լուրջ աշխատանքային սովորություններ ունեք և աշխատանքը սովորաբար ավարտում եք ժամանակին կամ ժամանակից շուտ: Եթե ավելի բարձր գնահատականը ազատության համար եք ստացել, ապա ձեր մոտեցումները աշխատանքի հանդեպ ավելի հանգիստ և անկազմակերպված են և դուք առանձնապես չեք հոքում ժամկետների և կանոնների համար:

Այլ տարբերակներ: Եթե երկու ձեր գնահատականները իրար մոտ են, ապա ձեզ մոտ կարգապահությունն ու ազատությունը հավասարակշռված են. Դուք

ազատորեն եք վերաբերվում սահմանափակություններին և առաջադրանքները ժամանակին էք կատարում առանց որևէ լարվածության:

Գործողություն 5. Ինչպես են ես վերաբերվում գաղափարներին:

Դասասենյակում. Եթե դուք գլոբալ մարդ եք, ապա ձեզ դուր է գալիս գտնել նյութի հիմնական գաղափարը, գուշակել իմաստը և շփվել մարդկանց հետ նույնիսկ երբ ոչ բոլոր բառերն ու հասկացություններն են ծանոթ: Եթե դուք վերլուծողական տեսակի անձ եք, ապա ավելի շատ կենտրոնանում եք մանրամասնությունների, տրամաբանական վերլուծության և հակադրությունների վրա:

Աշխատանքի մեջ. Եթե դուք գլոբալ անձ եք, ապա աշխատանքի մեջ դուք կենտրոնանում եք գլխավոր պահերի վրա՝ առանց շատ հոբալով մանրամասնությունների վրա: Եթե դուք վերլուծողական ուժին եք, ապա դուք «մանրամասնությունների մարդ» եք, որոնք հայտնի են իրենց տրամաբանական լինելով և չեն կարողանում անմիջապես տեսնել պատկերը ամբողջությամբ:

Այլ տարբերակներ. Եթե երկու ձեր գնահատականները իրար մոտ են, ապա դուք հեշտորեն փոխում եք գլոբալ մտածելակերպը վերլուծողականի և հակառակը:

Յուրաքանչյուր նախընտրած ոճ (վերոհիշյալ հարցաշարի սահմաններում) էական առավելություններ է ներառում ուսման և աշխատանքի մեջ: Բացահայտեք ձեր առավելությունները և հաճախակի դրանք կիրառեք: Բացի այդ, զարգացրեց ձեր սովորելու և աշխատելու կարողությունները՝ գիտակցելով, որ գոյություն ունեն այլ ոճեր, որոնք դուք չեք օգտագործում և զարգացնելով վերջիններս: Այն առաջադրանքները, որոնք կարծես այնքան չեն համընկնում ձեր նախընտրած ոճին կօգնեն ձեզ դուս գալ ձեր սովորական «կոմֆորտային շրջանից» և ավելացնեն ձեր սովորելու և աշխատելու ներուժը:

Օրինակ, եթե դուք վերին աստիճանի գլոբալ անձ եք, ավելի արդյունավետ աշխատելու և սովորելու համար ձեզ համար օգտակար կլինի սովորել կիրառելով վերլուծություն և տրամաբանություն: Եթե դուք չափազանց վերլուծողական մարդ էք, ապա ձեզ մոտ շատ օգտակար գլոբալ որակների պակաս կարող է զգացվել, ասենք, արագ գտնել հիմնական գաղափարը: Պրակտիկայի միջոցով դուք կարող եք ձեր մեջ զարգացնել նման որակ: Նոր մոտեցումներ փորձելով դուք չեք կորցնի ձեզ հատուկ ուժեղ կողմերը, պարզապես կզարգացնեք ձեր անձի մեկ այլ կողմը, որը շատ օգտակար կարող է լինել:

Եթե դուք վստահ չեք, թե ինչպես կարելի դուրս գալ ձեր սովորական վարվելակերպի սահմաններից դուրս, ապա խնդրեք ձեր գործընկերներին, բարեկամներին կամ ուսուցիչների օգնել ձեզ: Զրուցեք որևէ մեկի հետ, ում ոճը տարբերվում է ձերինից և պարզեք, թե ինչպես է նա գործում:

Բարելավե՛ք ձեր ուսումն ու աշխատանքը լայնացնելով ձեր ոճը:

STRATEGY INVENTORY FOR LANGUAGE LEARNING (SILL)

Version for Speakers of Other Languages Learning English

Rebecca Oxford (1989)

This form of the Strategy Inventory for Language Learning (SILL) is for students of English as a Second or foreign language. You will find statements about learning English. Please, read each statement. On the separate worksheet, write the response (1, 2, 3, 4 or 5) that tells How True of You the Statement is.

1. Never or almost never true of me.
2. Usually not true of me.
3. Somewhat true of me.
4. Usually true of me.
5. Always or almost always true of me.

NEVER OR ALMOST NEVER TRUE OF ME means that the statement is very rarely true of you.

USUALLY NOT TRUE OF ME means that the statement is true of you less than half the time.

SOMEWHAT TRUE OF ME means that the statement is true of you about half the time.

USUALLY TRUE OF ME means that the statement is true more than half the time.

ALWAYS OR ALMOST ALWAYS TRUE OF ME means that the statement is true of you.

Answer in terms of how well the statement describes you. Do not answer how you think you should be, or what other people do. There are no right or wrong answers to these statements. Put your answers on a separate worksheet. Please, make no marks on the items. Work as quickly as you can, without being careless. This usually takes about 20-30 minutes to complete. If you have any questions let the teacher know immediately.

Example

1. Never or almost never true of me.
2. Usually not true of me.
3. Somewhat true of me.
4. Usually true of me.
5. Always or almost always true of me.

Read the items and choose a response from 1 through 5 as above, and mark it in the space after the item.

I actively seek out opportunities to talk with native speakers of English. 1 2 3 4 5

You have just completed the example. Answer the rest of the items on the worksheet.

Part A

1.	I think of relationships between what I already know and new things I learn in English.	1	2	3	4	5
2.	I use new English words in a sentence so I can remember them.	1	2	3	4	5
3.	I connect the sound of a new English word and an image or picture of the word to help me remember the word.	1	2	3	4	5
4.	I remember a new English word by making a mental picture of a situation in which the word might be used.	1	2	3	4	5
5.	I use rhymes to remember new English words.	1	2	3	4	5
6.	I use flashcard to remember new English words.	1	2	3	4	5
7.	I physically act out new English words.	1	2	3	4	5
8.	I review English lessons often.	1	2	3	4	5
9.	I remember new English words or phrases by remembering their location on the page, on the board or on a street sign.	1	2	3	4	5

Total _____

Part B

10.	I say or write new English words several times.	1	2	3	4	5
11.	I try to talk like native English speakers.	1	2	3	4	5
12.	I practice the sounds of English.	1	2	3	4	5
13.	I use the English words I know in different ways.	1	2	3	4	5
14.	I start conversations in English.	1	2	3	4	5
15.	I watch English language TV shows spoken in English or go to movies spoken in English.	1	2	3	4	5
16.	I read for pleasure in English.	1	2	3	4	5
17.	I write notes, messages, letters, or reports in English.	1	2	3	4	5
18.	I first skim an English passage (read over the passage quickly) then go back and read carefully.	1	2	3	4	5
19.	I look for words in my own language that are similar to new words in English.	1	2	3	4	5
20.	I try to find patterns in English.	1	2	3	4	5
21.	I find the meaning of an English word by dividing it into parts that I understand.	1	2	3	4	5
22.	I try not to translate word for word.	1	2	3	4	5
23.	I make summaries of information that I hear or read in English.	1	2	3	4	5

Total _____

Part C

24.	To understand unfamiliar English words, I make guesses.	1	2	3	4	5
25.	When I can't think of a word during a conversation in English, I use gestures.	1	2	3	4	5
26.	I make up new words if I don't know the right ones in English.	1	2	3	4	5
27.	I read English without looking up every new word.	1	2	3	4	5
28.	I try to guess what the other person will say next in English.	1	2	3	4	5
29.	If I can't think of an English word, I use a word or phrase that means the same thing.	1	2	3	4	5

Total _____

Part D

30.	I try to find as many ways as I can to use my English.	1	2	3	4	5
31.	I notice my English mistakes and use that information to help me do better.	1	2	3	4	5
32.	I pay attention when someone is speaking English.	1	2	3	4	5
33.	I try to find out how to be a better learner of English.	1	2	3	4	5
34.	I plan my schedule so will have enough time to study English.	1	2	3	4	5
35.	I look for people I can talk to in English.	1	2	3	4	5
36.	I look for opportunities to read as much as possible in English.	1	2	3	4	5
37.	I have clear goals for improving my English skills.	1	2	3	4	5
38.	I think about my progress in learning English.	1	2	3	4	5

Total _____

Part E

39.	I try to relax whenever I feel afraid of using English.	1	2	3	4	5
40.	I encourage myself to speak English even when I am afraid of making a mistake.	1	2	3	4	5
41.	I give myself a reward or treat when I do well in English.	1	2	3	4	5
42.	I notice if I am tense or nervous when I am studying or using English.	1	2	3	4	5
43.	I write down my English in a language learning diary.	1	2	3	4	5
44.	I talk to someone else about how feel when I am learning English.	1	2	3	4	5

Total _____

Part F

- | | | | | | |
|---|---|---|---|---|---|
| 45. If I do not understand something in English, I ask the other person to slow down or say it again. | 1 | 2 | 3 | 4 | 5 |
| 46. I ask English speakers to correct me when I talk. | 1 | 2 | 3 | 4 | 5 |
| 47. I practice English with other students. | 1 | 2 | 3 | 4 | 5 |
| 48. I ask for help from English speakers. | 1 | 2 | 3 | 4 | 5 |
| 49. I ask questions in English. | 1 | 2 | 3 | 4 | 5 |
| 50. I try to learn about the culture of English speakers | 1 | 2 | 3 | 4 | 5 |

Total _____

Ստրատեգիաների հավաքածու լեզու սովորելու համար

Տարբերակ անգլերենը որպես օտար լեզու սովորողների համար

Ստրատեգիաների ինվենտար լեզու սովորելու համար

Տարբերակ 7.0 ԱԵԼ/ԱՕԼ

Ռ. Օքսֆորդ, 1989

Լեզու սովորելու ստրատեգիաների հավաքածուի սույն ձևն անգլերենը որպես օտար լեզու սովորողների համար է: Ղուք կգտնեք կարծիքներ անգլերեն սովորելու վերաբերյալ: Խնդրում ենք, ուշադիր կարդացեք յուրաքանչյուր կարծիքը: Կարծիքի դիմաց գրեք պատասխանը 1,2,3,4 կամ 5 , որն ասում է թե ՈՐՔԱՆՈՎ Է ՀԱՄԱՊԱՏԱԽԱՆՈՒՄ ՁԵՁ ՏՎՅԱԼ ԿԱՐԾԻՔԸ:

1. Երբեք ես այդպես չեմ անում:
2. Սովորաբար ես այդպես չեմ անում:
3. Ինչ որ չափով ես այդպես եմ անում:
4. Սովորաբար ես այդպես եմ անում:
5. Միշտ կամ համարյա միշտ ես այդպես եմ անում:

«Երբեք ես այդպես չեմ անում» նշանակում է, որ կարծիքը լիովին չի համապատասխանում ձեզ:

«Սովորաբար ես այդպես չեմ անում» նշանակում է, որ կարծիքը նույնիսկ կիսով չափ չի համապատասխանում ձեզ:

«Ինչ որ չափով ես այդպես եմ անում» նշանակում է, որ կարծիքը համարյա կիսով չափ է համապատասխանում ձեզ:

«Սովորաբար ես այդպես եմ անում» նշանակում է, որ կարծիքը ավելի քան կիսով չափ է համապատասխանում ձեզ:

«Միշտ կամ համարյա միշտ ես այդպես եմ անում» նշանակում է, որ կարծիքը համարյա ամբողջովին է համապատասխանում ձեզ:

Պատասխանեք ելնելով նրանից, թե որքանքով է կարծիքը ձեզ նկարագրում: Մի պատասխանեք այնպես, ինչպես որ դուք կցանկանայիք, որ լինեի կամ թե ինչպես եմ անում ուրիշ մարդիկ: Այս կարծիքների վերաբերյալ ոչ մի ճիշտ կամ սխալ պատասխան չկա: Խնդրում ենք ոչ մի նշան չանել կարծիքների վրա: Աշխատեք որքան որ հնարավոր է արագ և ուշադիր: Սովորաբար հարցաթերթիկը

լրացնելը 20-30 րոպե է տևում: Երե դուք որևէ հարց ունեք, անմիջապես տեղյակ պահեք ուսուցչին:

Օրինակ

1. Երբեք ես այդպես չեմ անում:
2. Սովորաբար ես այդպես չեմ անում:
3. Ինչ որ չափով ես այդպես եմ անում:
4. Սովորաբար ես այդպես եմ անում:
5. Միշտ կամ համարյա միշտ ես այդպես եմ անում:

Կարդացեք կարծիքը և վերևում տրված 1-5 պատասխաններից ընտրեք մի պատասխան:

Ես ակտիվորեն փնտրում եմ
հնարավորություններ բնիկ անգլիախոսների հետ
խոսելու համար:

1 2 3 4 5

Դուք հենց նոր պատասխանեցիք օրինակի հարցին: Պատասխանեք մնացածին՝
ընտրելով մեկ պատասխան:

Ստրատեգիաների հավաքածու լեզու սովորելու համար

Տարբերակ 7.0 ԱԵԼ/ԱՕԼ

Ռ. Օքսֆորդ, 1989

1. Երբեք ես այդպես չեմ անում:
2. Սովորաբար ես այդպես չեմ անում:
3. Ինչ որ չափով ես այդպես եմ անում:
4. Սովորաբար ես այդպես եմ անում:
5. Միշտ կամ համարյա միշտ ես այդպես եմ անում:

Մաս Ա

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| 1. Նոր բան սովորելիս ես փորձում եմ այն
կապել իմ իմացաչի հետ: | 1 | 2 | 3 | 4 | 5 |
| 2. Ես օգտագործում եմ նոր անգլերեն
բառերը նախադասության մեջ, որպեսզի
հիշեմ դրանք: | 1 | 2 | 3 | 4 | 5 |
| 3. Նոր բառ սովորելիս ես կապում եմ այդ | 1 | 2 | 3 | 4 | 5 |

- բառի հնչյունները այդ բառի նկարի հետ:
4. Ես հիշում եմ անգլերեն բառը՝ մտովի պատկերացնելով թե ինչ սիտուացիաներում այն կարող է օգտագործվել:
5. Ես հանգերով եմ հիշում նոր անգլերեն բառերը (ոտանավորի պես):
6. Ես օգտագործում եմ փոքրիկ քարտեր նոր բառերը հիշելու համար:
7. Ես ֆիզիկապես եմ սովորում նոր բառերը (օրինակ՝ քայլում եմ, երբ սովորում եմ «քայլել» բառը):
8. Ես հաճախ եմ կրկնում իմ անգլերենի դասերը:
9. Ես հիշում եմ նոր անգլերեն բառերը՝ հիշելով այն տեղը, օրինակ էջը, տեքստը, գրատախտակը կամ փողոցի նշանը, որտեղ հանդիպել է այդ բառը:

Մաս Բ

10. Ես մի քանի անգամ ասում կամ գրում եմ նոր անգլերեն բառերը:
11. Ես փորձում եմ խոսել բնիկ անգլիախոսների պես:
12. Ես պարապում եմ արտաբերել անգլերենի հնչյունները:
13. Ես օգտագործում եմ իմ իմացած անգլերեն անգլերեն բառերը տարբեր ձևերով:
14. Ես անգլերենով եմ սկսում խոսակցությունները:
15. Ես դիտում եմ անգլերեն լեզվով հեռուստահաղորդումներ կամ կինոնկարներ:
16. Ես հաճույքի համար կարդում եմ անգլերեն գրքեր:
17. Ես գրում եմ հաղորդագրություններ, նամակներ կամ զեկույցներ անգլերեն լեզվով:
18. Ես սկզբից արագ աչքի եմ անցկացնում էջը, ապա հետ վերադառնում եմ կարդում այն մանրակրկիտ ձևով:
19. Ես փնտրում եմ բառեր իմ մայրենի լեզվում, որոնք նման են անգլերենի

բառերին:

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| 20. Ես փորձում եմ ձևեր գտնել անգլերեն լեզվի մեջ (օրինակ՝ kind, blind, find) | 1 | 2 | 3 | 4 | 5 |
| 21. Ես փորձում եմ գտնել բառի իմաստը՝ բաժանելով այն իմաստավոր մասերի(օրինակ՝ bed (մահճակալ)- room (սենյակ)): | 1 | 2 | 3 | 4 | 5 |
| 22. Ես փորձում եմ չթարգմանել բառացիորեն: | 1 | 2 | 3 | 4 | 5 |
| 23. Ես համառոտակի գրում եմ այն ինֆորմացիան, որ լսում կամ կարդում եմ անգլերենով: | 1 | 2 | 3 | 4 | 5 |

Մաս Գ

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| 24. Ես փորձում եմ կռահել անժանոթ բառի իմաստը: | 1 | 2 | 3 | 4 | 5 |
| 25. Երբ խոսակցության մեջ չեմ կարող գտնել անգլերեն բառը, ձեռքի շարժումով եմ այն բացատրում: | 1 | 2 | 3 | 4 | 5 |
| 26. Եթե ես բառը չգիտեմ անգլերենով, ապա փորձում եմ այն հորինել: | 1 | 2 | 3 | 4 | 5 |
| 27. Անգլերենով կարդալիս ես չեմ նայում յուրաքանչյուր անժանոթ բառ բառարանի մեջ: | 1 | 2 | 3 | 4 | 5 |
| 28. Անգլերենով զրուցելիս ես փորձում եմ կռահել, թե ինչ կասի իմ խոսակիցը | 1 | 2 | 3 | 4 | 5 |
| 29. Եթե ես չգիտեմ տվյալ անգլերեն բառը, ես ասում եմ մեկ այլ բառ կամ արտահայտություն, որն ունի նույն իմաստը: | 1 | 2 | 3 | 4 | 5 |

Մաս Դ

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| 30. Ես փորձում եմ օգտագործել անգլերենը որքան և հնարավոր է շատ: | 1 | 2 | 3 | 4 | 5 |
| 31. Ես նկատում եմ իմ անգլերենի սխալները և փորձում եմ ուղղել դրանք: | 1 | 2 | 3 | 4 | 5 |
| 32. Ես շատ ուշադիր եմ, երբ որևէ մեկը խոսում է անգլերեն: | 1 | 2 | 3 | 4 | 5 |
| 33. Ես փորձում եմ պարզել, թե ինչպես կարելի է ավելի լավ սովորել անգլերեն: | 1 | 2 | 3 | 4 | 5 |
| 34. Ես պլանավորում եմ իմ ժամացուցակը, որպեսզի ունենամ բավականին ժամանակ անգլերենի համար: | 1 | 2 | 3 | 4 | 5 |
| 35. Ես փնտրում եմ մարդ, ում հետ կարող եմ խոսել անգլերեն: | 1 | 2 | 3 | 4 | 5 |

36. Ես փնտրում եմ հնարավորություններ հնարավորին չափ շատ անգլերենով կարդալու :	1	2	3	4	5
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37. Ես հստակ որոշել եմ լավացնել իմ անգլերենը:	1	2	3	4	5
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38. Ես մտածում եմ իմ առաջադիմության մասին անգլերեն սովորելու մեջ:	1	2	3	4	5
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Մաս Ե

39. Ես փորձում եմ լիցքաթափվել, երբ վախենում եմ օգտագործել անգլերեն լեզուն:	1	2	3	4	5
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40. Ես ինքս ինձ խրախուսում եմ խոսել անգլերեն, նույնիսկ եթե ես վախենում եմ սխալների անելուց:	1	2	3	4	5
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41. Ես ինքս ինձ պարգևատրում եմ, երբ հաջողության եմ հասնում անգլերենի մեջ:	1	2	3	4	5
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42. Եթե ես լարված կամ նյարդայնացած եմ անգլերեն սովորորելիս կամ օգտագործելիս այն՝ ես դա նկատում եմ:	1	2	3	4	5
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43. Ես գրի եմ առնում իմ զգացողությունները լեզու սովորելու օրատետրի մեջ:	1	2	3	4	5
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44. Ես որևէ մեկի հետ եմ կիսվում, թե ինչպես եմ զգում անգլերեն սովորելիս:	1	2	3	4	5
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Մաս Զ

45. Անգլերենով զրուցելիս եթե որևէ բան չեմ հասկանում, խնդրում եմ զրուցակցիս ավելի դանդաղ խոսել կամ կրկնել ասածը:	1	2	3	4	5
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46. Ես խնդրում եմ բնիկ անգլիախոսներին ուղղել ինձ, երբ ես խոսում եմ:	1	2	3	4	5
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47. Ես անգլերեն եմ խոսում համակուրսեցիներիս հետ:	1	2	3	4	5
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48. Ես օգնություն եմ խնդրում բնիկ անգլիախոսներից:	1	2	3	4	5
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49. Ես հարցերս անգլերեն եմ տալիս:	1	2	3	4	5
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50. Ես փորձում եմ սովորել անգլիախոսների մշակույթի մասին:	1	2	3	4	5
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This survey is conducted for research purposes. By signing below you give your consent for participation to the research and contribute to it by providing information. However, this is done totally on a voluntary basis and it is not obligatory for you to complete the questionnaires against your will. You are free to withdraw from the survey at any moment.

Thank you for your participation and assistance.

PARTICIPANT'S NAME

SIGNATURE

1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____
6. _____	_____
7. _____	_____
8. _____	_____
9. _____	_____
10. _____	_____
11. _____	_____
12. _____	_____
13. _____	_____
14. _____	_____
15. _____	_____
16. _____	_____
17. _____	_____
18. _____	_____

SEX

Male / Female

AGE

LANGUAGE ABILITY LEVEL

Beginner / Intermediate / Advanced

MAJOR

COLLECTED DATA

GENERAL INFORMATION					LEARNING STRATEGIES					LEARNING STYLES													
Number of Participants	Participants' codes	Sex	Age	Academic Major	Language Proficiency Level	Direct Strategies				Indirect Strategies			Physical			Social		Handling Possibilities		Approaching Tasks		Dealing with Ideas	
						Memory	Cognitive	Compensation	Metacognitive	Affective	Social	Overall	Visual	Auditory	Hands-on	Extroverted	Introverted	Intuitive	Concrete	Sequential	Closure Oriented	Open	Global
1.	A-1	F	17	Journalism	Beginner	2.9	2.0	2.2	4.1	2.5	2.7	2.7	12	11	11	15	16	20	14	22	16	11	13
2.	A-2	F	18	Journalism	Beginner	3.0	2.3	2.7	3.7	2.5	2.7	2.7	19	19	12	17	14	13	14	17	10	16	12
3.	A-3	F	20	Journalism	Beginner	2.8	2.0	3.8	4.0	3.2	2.3	2.8	14	14	21	17	20	22	20	13	17	20	17
4.	A-4	F	18	Journalism	Beginner	3.0	2.6	3.5	3.1	2.4	2.6	2.7	13	14	15	16	9	24	15	18	10	21	10
5.	A-5	F	17	Journalism	Beginner	1.7	2.7	2.5	4.1	2.5	2.0	3.2	18	16	13	16	7	23	20	23	15	21	13
6.	A-6	F	19	Journalism	Beginner	3.7	3.5	3.3	3.8	2.0	3.0	3.3	13	16	15	17	18	23	18	22	19	16	14
7.	A-7	F	17	Journalism	Beginner	3.1	3.0	2.0	4.2	2.3	2.5	3.0	14	14	16	20	7	20	13	20	11	10	13
8.	A-8	F	23	Journalism	Beginner	3.4	3.1	3.0	4.2	2.8	3.3	3.4	13	22	22	17	9	12	20	15	10	13	13
9.	A-9	F	18	Journalism	Beginner	2.3	3.3	3.8	4.2	2.8	2.2	3.1	12	13	10	25	9	20	18	14	14	15	11
10.	A-10	F	18	Journalism	Beginner	3.0	3.6	2.7	4.4	3.7	3.5	3.6	14	11	13	4	20	13	16	22	13	17	9
11.	A-11	F	17	Journalism	Beginner	3.6	3.0	4.5	3.9	3.3	2.7	3.4	19	19	18	19	23	29	18	22	17	22	21
12.	A-12	F	18	Journalism	Beginner	Discarded																	
13.	A-13	M	17	Journalism	Beginner	Discarded																	
14.	B-1	F	17	Agricultural Economics	Intermediate	2.3	3.4	3.5	3.4	1.7	2.0	2.9	15	19	9	23	9	23	21	21	18	19	11
15.	B-2	M	18	Agricultural Economics	Intermediate	2.9	3.1	2.8	3.5	3.8	3.0	3.2	12	15	13	14	13	16	15	12	15	12	16
16.	B-3	F	26	Biotechnology	Intermediate	3.8	4.0	4.3	3.5	2.5	3.7	3.7	10	18	14	12	17	21	19	11	18	26	14

17.	B-4	F	18	Agricultural Economics	Intermediate	3.4	3.6	4.4	3.7	2.7	2.8	3.6	15	19	17	21	16	24	19	19	12	17	11
18.	B-5	F	17	Agricultural Economics	Intermediate	3.4	4.0	3.5	4.1	3.8	3.7	3.7	10	8	13	15	10	14	17	18	11	19	12
19.	B-6	F	18	Agricultural Economics	Intermediate	4.4	3.9	3.8	4.1	3.8	4.8	4.0	20	19	21	26	7	18	20	23	9	18	12
20.	B-7	F	18	Leather and Fur Technology	Intermediate	2.9	4.1	4.5	4.8	3.2	4.8	4.0	9	13	13	18	7	13	18	26	17	21	19
21.	B-8	F	19	Agricultural Marketing	Intermediate	2.2	2.5	2.3	3.6	3.2	2.9	2.8	10	12	9	22	3	17	17	18	13	15	11
22.	B-9	M	18	Economics of Food	Intermediate	2.6	2.4	3.2	2.8	2.8	2.8	2.6	20	20	15	17	16	19	21	19	14	17	13
23.	B-10	M	17	Economics of Food	Intermediate	2.3	2.3	3.2	3.0	2.6	2.7	2.6	21	19	15	18	16	19	22	17	13	18	13
24.	B-11	F	19	Economics of Food	Intermediate	Discarded																	
25.	C-1	M	18	Economics	Intermediate	4.1	3.9	4.0	3.4	2.8	4.0	3.7	20	22	23	12	19	23	12	19	16	20	21
26.	C-2	F	19	Economics	Intermediate	3.6	3.1	4.0	3.8	3.7	3.2	3.5	15	13	20	15	13	21	16	15	17	22	22
27.	C-3	F	19	Economics	Intermediate	3.1	2.6	3.3	2.4	3.0	3.2	2.8	19	16	16	17	12	9	10	16	9	13	12
28.	C-4	M	18	Economics	Intermediate	3.8	3.8	4.0	4.4	4.0	4.2	3.5	15	15	13	12	13	17	15	15	14	18	16
29.	C-5	F	20	Economics	Intermediate	3.0	3.0	2.2	2.0	2.8	2.2	2.4	19	12	15	13	12	25	17	26	13	20	15
30.	C-6	M	19	Economics	Intermediate	4.3	3.9	2.8	4.1	4.0	4.6	3.4	20	21	18	21	9	15	21	25	14	23	15
31.	C-7	M	19	Economics	Intermediate	2.9	2.9	3.2	3.5	2.6	3.0	2.7	10	10	12	18	12	17	25	19	14	18	10
32.	C-8	F	19	Economics	Intermediate	3.2	3.9	4.8	4.5	3.8	3.6	3.5	17	18	20	21	12	21	21	13	18	24	20
33.	C-9	M	19	Economics	Intermediate	2.6	3.5	3.8	3.9	2.6	3.4	2.9	14	20	18	18	10	18	17	14	17	23	9
34.	C-10	M	18	Economics	Intermediate	3.6	3.1	3.7	4.1	3.6	4.4	3.1	15	18	18	18	14	21	20	20	15	21	14
35.	C-11	M	19	Economics	Intermediate	3.4	3.7	3.6	4.0	4.0	4.0	3.4	16	12	8	14	3	12	15	16	3	19	10
36.	C-12	M	19	Economics	Intermediate	3.5	3.5	3.6	4.0	3.2	4.4	3.7	13	15	16	14	11	22	16	17	12	17	15
37.	C-13	M	18	Economics	Intermediate	3.6	3.8	4.2	4.2	4.0	4.0	3.9	22	14	20	13	21	24	15	18	18	20	22
38.	C-14	F	19	Economics	Intermediate	3.6	4.3	4.6	4.7	2.4	4.8	4.1	21	12	23	21	5	24	21	26	12	17	11
39.	C-15	F	18	Economics	Intermediate	2.9	3.2	2.8	2.5	2.2	2.0	2.7	33	20	22	22	13	13	17	18	17	17	17
40.	C-16	F	19	Economics	Intermediate	3.1	3.9	3.4	5.0	3.0	4.2	3.9	19	14	22	22	11	20	12	13	13	18	12
41.	C-17	F	18	Economics	Intermediate	3.6	3.8	3.8	3.9	3.6	3.8	3.8	21	18	18	25	12	20	11	17	19	22	17
42.	C-18	F	19	Economics	Intermediate	2.9	3.2	4.2	3.6	3.8	2.8	3.4	14	14	14	17	10	22	12	18	9	21	7
43.	C-19	M	19	Economics	Intermediate	Discarded																	

44.	C-20	F	19	Economics	Intermediate	Discarded															
45.	D-1	F	25	IESM	Advanced	3.7	2.8	2.8	3.9	3.2	3.3	3.3	3.3	24	13	13	15	12	16	16	16
46.	D-2	F	24	MBA	Advanced	1.6	3.3	3.0	3.0	2.2	3.7	2.8	2.8	12	16	8	24	14	12	24	6
47.	D-3	F	23	MBA	Advanced	3.3	3.6	4.2	4.2	3.7	3.2	3.7	3.7	19	22	20	18	15	22	5	6
48.	D-4	F	29	IESM	Advanced	2.4	3.4	3.5	4.8	4.2	4.7	3.7	3.7	12	16	8	17	8	24	18	12
49.	D-5	F	25	MBA	Advanced	2.4	1.9	2.2	2.3	1.7	1.8	2.0	2.0	14	18	23	22	3	21	7	8
50.	D-6	M	23	MBA	Advanced	2.1	3.3	3.2	3.8	2.8	2.8	3.0	3.0	16	10	10	16	12	21	7	14
51.	D-7	M	39	IESM	Advanced	2.3	3.6	3.2	4.0	3.2	3.3	3.3	3.3	17	11	13	14	11	15	9	13
52.	D-8	M	29	MBA	Advanced	2.8	3.3	3.8	3.4	3.0	2.7	3.2	3.2	10	14	11	23	7	20	10	11
53.	D-9	M	29	MBA	Advanced	1.9	3.2	3.2	3.2	2.5	3.7	2.9	2.9	15	19	17	16	18	12	12	10
54.	D-10	M	32	IESM	Advanced	2.3	2.6	2.7	3.1	2.5	3.0	2.5	2.5	17	10	12	13	21	26	14	15
55.	D-11	F	25	IESM	Advanced	2.7	2.9	3.5	3.4	3.2	3.7	3.2	3.2	15	18	24	16	20	18	21	18
56.	D-12	F	31	MBA	Advanced	3.4	3.5	3.3	4.4	1.2	4.2	3.4	3.4	14	11	13	15	16	20	4	14
57.	D-13	M	25	MBA	Advanced	3.3	4.0	3.3	4.6	1.7	3.0	3.5	3.5	18	15	14	17	14	21	19	19
58.	D-14	F	26	IESM	Advanced	2.5	4.5	4.8	4.3	2.8	2.8	3.8	3.8	10	14	11	23	20	23	16	21
59.	D-15	M	29	MBA	Advanced	Discarded															
60.	E-1	M	25	Engineering	Low Intern.	2.4	3.6	3.0	4.0	2.0	4.5	3.3	3.3	14	13	14	14	16	14	13	13
61.	E-2	F	31	Engineering	Low Intern.	3.0	3.8	4.2	4.1	3.2	4.0	3.7	3.7	10	15	8	20	2	9	20	11
62.	E-3	M	34	Engineering	Low Intern.	2.9	3.2	3.5	3.7	3.2	4.0	3.4	3.4	14	14	16	18	11	12	12	15
63.	E-4	M	33	Engineering	Low Intern.	2.8	3.3	3.2	3.9	2.3	3.7	2.6	2.6	11	16	15	19	9	12	20	13
64.	E-5	M	26	Engineering	Low Intern.	3.0	3.7	3.5	4.8	2.3	4.8	3.7	3.7	15	15	10	17	9	21	8	15
65.	E-6	F	23	Engineering	Low Intern.	2.9	2.9	4.3	3.3	3.2	2.0	3.0	3.0	11	8	13	26	18	21	13	20
66.	E-7	F	21	Engineering	Low Intern.	2.9	2.9	4.0	3.3	3.0	2.3	3.0	3.0	13	8	13	22	16	20	14	18
67.	E-8	F	25	Engineering	Low Intern.	Discarded															
68.	E-9	M	24	Engineering	Low Intern.	Discarded															
69.	E-10	M	22	Engineering	Low Intern.	Discarded															

LEARNING STYLE AND STRATEGY RESULTS IN EACH EDUCATIONAL INSTITUTION

1. Galik

Learning Styles

	PHYSICAL			SOCIAL		HANDLING POSSIBILITIES		APPROACHING TASKS		DEALING WITH IDEAS	
	Visual	Auditory	Hands-on	Extroverted	Introverted	Intuitive	Concrete sequential	Closure oriented	Open	Global	Analytic
A-1	12	11	11	15	16	20	14	22	16	11	13
A-2	19	19	12	17	14	13	14	17	10	16	12
A-3	14	14	21	17	20	22	20	13	17	20	17
A-4	13	14	15	16	9	24	15	18	10	21	10
A-5	18	16	13	16	7	23	20	23	15	21	13
A-6	13	16	15	17	18	23	18	22	19	16	14
A-7	14	14	16	20	7	20	13	20	11	10	13
A-8	13	22	22	17	9	12	20	15	10	13	13
A-9	12	13	10	25	9	20	18	14	14	15	11
A-10	14	11	13	4	20	13	16	22	13	17	9
A-11	19	19	18	19	23	29	18	22	17	22	21

Learning Strategies

	DIRECT			INDIRECT			Overall
	Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
A-1	2.9	2.0	2.2	4.1	2.5	2.7	2.7
A-2	3.0	2.3	2.7	3.7	2.5	2.7	2.7
A-3	2.8	2.0	3.8	4.0	3.2	2.3	2.8
A-4	3.0	2.6	3.5	3.1	2.4	2.6	2.7
A-5	1.7	2.7	2.5	4.1	2.5	2.0	3.2
A-6	3.7	3.5	3.3	3.8	2.0	3.0	3.3
A-7	3.1	3.0	2.0	4.2	2.3	2.5	3.0
A-8	3.4	3.1	3.0	4.2	2.8	3.3	3.4
A-9	2.3	3.3	3.8	4.2	2.8	2.2	3.1
A-10	3.0	3.6	2.7	4.4	3.7	3.5	3.6
A-11	3.6	3.0	4.5	3.9	3.3	2.7	3.4

2. Agricultural Academy

Learning Styles

	PHYSICAL			SOCIAL		HANDLING POSSIBILITIES		APPROACHING TASKS		DEALING WITH IDEAS	
	Visual	Auditory	Hands-on	Extroverted	Introverted	Intuitive	Concrete sequential	Closure oriented	Open	Global	Analytic
B-1	15	19	9	23	9	23	21	21	18	19	11
B-2	12	15	13	14	13	16	15	12	15	12	16
B-3	10	18	14	12	17	21	19	11	18	26	14
B-4	15	19	17	21	16	24	19	19	12	17	11
B-5	10	8	13	15	10	14	17	18	11	19	12
B-6	20	19	21	26	7	18	20	23	9	18	12
B-7	9	13	13	18	7	13	18	26	17	21	19
B-8	10	12	9	22	3	17	17	18	13	15	11
B-9	20	20	15	17	16	19	21	19	14	17	13
B-10	21	19	15	18	16	19	22	17	13	18	13

Learning Strategies

	DIRECT			INDIRECT			Overall
	Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
B-1	2.3	3.4	3.5	3.4	1.7	2.0	2.9
B-2	2.9	3.1	2.8	3.5	3.8	3.0	3.2
B-3	3.8	4.0	4.3	3.5	2.5	3.7	3.7
B-4	3.4	3.6	4.4	3.7	2.7	2.8	3.6
B-5	3.4	4.0	3.5	4.1	3.8	3.7	3.7
B-6	4.4	3.9	3.8	4.1	3.8	4.8	4.0
B-7	2.9	4.1	4.5	4.8	3.2	4.8	4.0
B-8	2.2	2.5	2.3	3.6	3.2	2.9	2.8
B-9	2.6	2.4	3.2	2.8	2.8	2.8	2.6
B-10	2.3	2.3	3.2	3.0	2.6	2.7	2.6

3. State University, Economic Department

Learning Styles

	PHYSICAL			SOCIAL		HANDLING POSSIBILITIES		APPROACHING TASKS		DEALING WITH IDEAS	
	Visual	Auditory	Hands-on	Extroverted	Introverted	Intuitive	Concrete sequential	Closure oriented	Open	Global	Analytic
C-1	20	22	23	12	19	23	12	19	16	20	21
C-2	15	13	20	15	13	21	16	15	17	22	22
C-3	19	16	16	17	12	9	10	16	9	13	12
C-4	15	15	13	12	13	17	15	15	14	18	16
C-5	19	12	15	13	12	25	17	26	13	20	15
C-6	20	21	18	21	9	15	21	25	14	23	15
C-7	10	10	12	13	12	17	25	19	14	18	10
C-8	17	18	20	21	12	21	21	13	18	24	20
C-9	14	20	18	13	10	18	17	14	17	23	9
C-10	15	18	18	18	14	21	20	20	15	21	14
C-11	16	12	8	14	3	12	15	16	3	19	10
C-12	13	15	16	14	11	22	16	17	12	17	15
C-13	22	14	20	13	21	24	15	18	18	20	22
C-14	21	12	23	21	5	24	21	26	12	17	11
C-15	33	20	22	22	13	13	17	18	17	17	17
C-16	19	14	22	22	11	20	12	13	13	18	12
C-17	21	18	18	25	12	20	11	17	19	22	17
C-18	14	14	14	17	10	22	12	18	9	21	7

Learning Strategies

	DIRECT			INDIRECT			Overall
	Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
C-1	4.1	3.9	4.0	3.4	2.8	4.0	3.7
C-2	3.6	3.1	4.0	3.8	3.7	3.2	3.5
C-3	3.1	2.6	3.3	2.4	3.0	3.2	2.8
C-4	3.8	3.8	4.0	4.4	4.0	4.2	3.5
C-5	3.0	3.0	2.2	2.0	2.8	2.2	2.4
C-6	4.3	3.9	2.8	4.1	4.0	4.6	3.4
C-7	2.9	2.9	3.2	3.5	2.6	3.0	2.7
C-8	3.2	3.9	4.8	4.5	3.8	3.6	3.5
C-9	2.6	3.5	3.8	3.9	2.6	3.4	2.9
C-10	3.6	3.1	3.7	4.1	3.6	4.4	3.1
C-11	3.4	3.7	3.6	4.0	4.0	4.0	3.4
C-12	3.5	3.5	3.6	4.0	3.2	4.4	3.7
C-13	3.6	3.8	4.2	4.2	4.0	4.0	3.9
C-14	3.6	4.3	4.6	4.7	2.4	4.8	4.1
C-15	2.9	3.2	2.8	2.5	2.2	2.0	2.7
C-16	3.1	3.9	3.4	5.0	3.0	4.2	3.9
C-17	3.6	3.8	3.8	3.9	3.6	3.8	3.8
C-18	2.9	3.2	4.2	3.6	3.8	2.8	3.4

4. AUA, IEP

Learning Styles

	PHYSICAL			SOCIAL		HANDLING POSSIBILITIES		APPROACHING TASKS		DEALING WITH IDEAS	
	Visual	Auditory	Hands-on	Extroverted	Introverted	Intuitive	Concrete sequential	Closure oriented	Open	Global	Analytic
D-1	24	13	13	15	14	16	17	15	12	16	16
D-2	12	16	8	24	11	20	16	14	12	24	6
D-3	19	22	20	18	18	15	22	19	5	27	6
D-4	12	16	8	17	8	24	27	20	18	22	12
D-5	14	18	23	22	3	21	14	21	7	21	8
D-6	16	10	10	16	12	21	7	17	7	13	14
D-7	17	11	13	14	11	15	15	20	9	22	13
D-8	10	14	11	23	7	20	11	16	10	19	11
D-9	15	19	17	16	18	12	13	18	12	17	10
D-10	17	10	12	13	21	26	14	18	12	13	15
D-11	15	18	24	16	20	18	21	22	14	13	18
D-12	14	11	13	15	16	20	16	25	4	16	14
D-13	18	15	14	17	14	21	19	21	19	22	19
D-14	10	14	11	23	20	23	25	19	16	29	21

Learning Strategies

	DIRECT			INDIRECT			Overall
	Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
D-1	3.7	2.8	2.8	3.9	3.2	3.3	3.3
D-2	1.6	3.3	3	3	2.2	3.7	2.8
D-3	3.3	3.6	4.2	4.2	3.7	3.2	3.7
D-4	2.4	3.4	3.5	4.8	4.2	4.7	3.7
D-5	2.4	1.9	2.2	2.3	1.7	1.8	2
D-6	2.1	3.3	3.2	3.8	2.8	2.8	3
D-7	2.3	3.6	3.2	4	3.2	3.3	3.3
D-8	2.8	3.3	3.8	3.4	3	2.7	3.2
D-9	1.9	3.2	3.2	3.2	2.5	3.7	2.9
D-10	2.3	2.6	2.7	3.1	2.5	3	2.5
D-11	2.7	2.9	3.5	3.4	3.2	3.7	3.2
D-12	3.4	3.5	3.3	4.4	1.2	4.2	3.4
D-13	3.3	4	3.3	4.6	1.7	3	3.5
D-14	2.5	4.5	4.8	4.3	2.8	2.8	3.8

5. Engineering University

Learning Styles

	PHYSICAL			SOCIAL		HANDLING POSSIBILITIES		APPROACHING TASKS		DEALING WITH IDEAS	
	Visual	Auditory	Hands-on	Extroverted	Introverted	Intuitive	Concrete sequential	Closure oriented	Open	Global	Analytic
E-1	21	13	14	14	14	16	14	19	14	13	13
E-2	10	15	8	20	2	9	18	20	9	20	11
E-3	14	14	16	18	11	12	17	16	12	15	15
E-4	11	16	15	19	9	12	20	22	7	20	13
E-5	15	15	10	17	9	21	18	16	8	18	15
E-6	11	8	13	26	18	21	18	16	13	26	20
E-7	13	8	13	22	16	20	16	18	14	20	18

Learning Strategies

	DIRECT			INDIRECT			Overall
	Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
E-1	2.4	3.6	3.0	4.0	2.0	4.5	3.3
E-2	3.0	3.8	4.2	4.1	3.2	4.0	3.7
E-3	2.9	3.2	3.5	3.7	3.2	4.0	3.4
E-4	2.8	3.3	3.2	3.9	2.3	3.7	2.6
E-5	3.0	3.7	3.5	4.8	2.3	4.8	3.7
E-6	2.9	2.9	4.3	3.3	3.2	2.0	3.0
E-7	2.9	2.9	4.0	3.3	3.0	2.3	3.0

THE IDENTIFIED LEARNING STYLES

	PHYSICAL			SOCIAL		HANDLING POSSIBILITIES		APPROACHING TASKS		DEALING WITH IDEAS	
	Visual	Auditory	Hands-on	Extroverted	Introverted	Intuitive	Concrete sequential	Closure oriented	Open	Global	Analytic
A-1	12	11	11	15	16	20	14	22	16	11	13
A-2	19	19	12	17	14	13	14	17	10	16	12
A-3	14	14	21	17	20	22	20	13	17	20	17
A-4	13	14	15	16	9	24	15	18	10	21	10
A-5	18	16	13	16	7	23	20	23	15	21	13
A-6	13	16	15	17	18	23	18	22	19	16	14
A-7	14	14	16	20	7	20	13	20	11	10	13
A-8	13	22	22	17	9	12	20	15	10	13	13
A-9	12	13	10	25	9	20	18	14	14	15	11
A-10	14	11	13	4	20	13	16	22	13	17	9
A-11	19	19	18	19	23	29	18	22	17	22	21
B-1	15	19	9	23	9	23	21	21	18	19	11
B-2	12	15	13	14	13	16	15	12	15	12	16
B-3	10	18	14	12	17	21	19	11	18	26	14
B-4	15	19	17	21	16	24	19	19	12	17	11
B-5	10	8	13	15	10	14	17	18	11	19	12
B-6	20	19	21	26	7	18	20	23	9	18	12
B-7	9	13	13	18	7	13	18	26	17	21	19
B-8	10	12	9	22	3	17	17	18	13	15	11
B-9	20	20	15	17	16	19	21	19	14	17	13
B-10	21	19	15	18	16	19	22	17	13	18	13
C-1	20	22	23	12	19	23	12	19	16	20	21
C-2	15	13	20	15	13	21	16	15	17	22	22
C-3	19	16	16	17	12	9	10	16	9	13	12
C-4	15	15	13	12	13	17	15	15	14	18	16
C-5	19	12	15	13	12	25	17	26	13	20	15
C-6	20	21	18	21	9	15	21	25	14	23	15
C-7	10	10	12	18	12	17	25	19	14	18	10
C-8	17	18	20	21	12	21	21	13	18	24	20
C-9	14	20	18	18	10	18	17	14	17	23	9
C-10	15	18	18	18	14	21	20	20	15	21	14
C-11	16	12	8	14	3	12	15	16	3	19	10
C-12	13	15	16	14	11	22	16	17	12	17	15
C-13	22	14	20	13	21	24	15	18	18	20	22
C-14	21	12	23	21	5	24	21	26	12	17	11
C-15	33	20	22	22	13	13	17	18	17	17	17
C-16	19	14	22	22	11	20	12	13	13	18	12
C-17	21	18	18	25	12	20	11	17	19	22	17
C-18	14	14	14	17	10	22	12	18	9	21	7
D-1	24	13	13	15	14	16	17	15	12	16	16
D-2	12	16	8	24	11	20	16	14	12	24	6

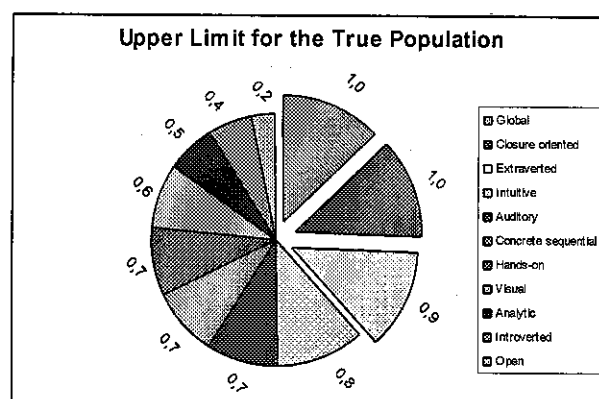
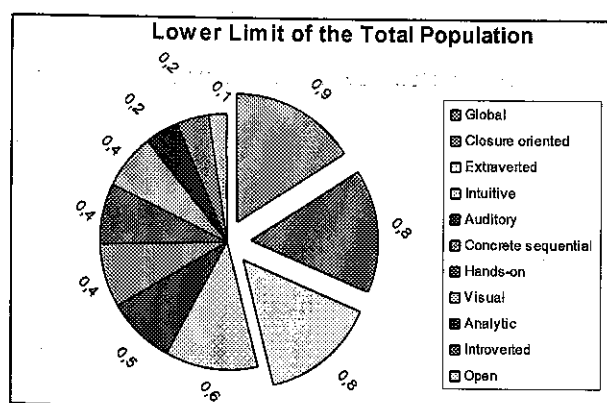
D-3	19	22	20	18	18	15	22	19	5	27	6
D-4	12	16	8	17	8	24	27	20	18	22	12
D-5	14	18	23	22	3	21	14	21	7	21	8
D-6	16	10	10	16	12	21	7	17	7	13	14
D-7	17	11	13	14	11	15	15	20	9	22	13
D-8	10	14	11	23	7	20	11	16	10	19	11
D-9	15	19	17	16	18	12	13	18	12	17	10
D-10	17	10	12	13	21	26	14	18	12	13	15
D-11	15	18	24	16	20	18	21	22	14	13	18
D-12	14	11	13	15	16	20	16	25	4	16	14
D-13	18	15	14	17	14	21	19	21	19	22	19
D-14	10	14	11	23	20	23	25	19	16	29	21
E-1	21	13	14	14	14	16	14	19	14	13	13
E-2	10	15	8	20	2	9	18	20	9	20	11
E-3	14	14	16	18	11	12	17	16	12	15	15
E-4	11	16	15	19	9	12	20	22	7	20	13
E-5	15	15	10	17	9	21	18	16	8	18	15
E-6	11	8	13	26	18	21	18	16	13	26	20
E-7	13	8	13	22	16	20	16	18	14	20	18

**IDENTIFIED LEARNING STYLES OF THE ARMENIAN UNIVERSITY
LEARNERS
(Sample Population Proportions)**

LEARNING STYLE	PROPORTION	PERCENTAGE	NUMBER
Global	0.9	91.67%	55
Closure oriented	0.9	88.33%	53
Extroverted	0.9	85.00%	51
Intuitive	0.7	73.33%	44
Auditory	0.6	58.33%	35
Concrete sequential	0.6	55.00%	33
Hands-on	0.5	53.33%	32
Visual	0.5	51.67%	31
Analytic	0.4	35.00%	21
Introverted	0.3	33.33%	20
Open	0.2	23.00%	14

**IDENTIFIED LEARNING STYLES OF THE ARMENIAN UNIVERSITY
LEARNERS
(True Population Proportions)**

STYLE	Lower Limit	Upper Limit	Error Margin
Global	0.85	0.99	0.07
Closure oriented	0.80	0.96	0.08
Extraverted	0.76	0.94	0.09
Intuitive	0.62	0.84	0.11
Auditory	0.46	0.70	0.12
Concrete sequential	0.42	0.68	0.13
Hands-on	0.40	0.66	0.13
Visual	0.39	0.65	0.13
Analytic	0.23	0.47	0.12
Introverted	0.21	0.45	0.12
Open	0.12	0.23	0.03



STYLE AND STRATEGY RELATIONSHIP

Scale for interpreting the strategy use

high	4.5 - 5.0	always or almost always used
	3.5 - 4.4	usually used
medium	2.5 - 3.4	sometimes used
low	1.5 - 2.4	generally not used
	1.0 - 1.4	never or almost never used

1. Visual Style

Quantity	Participant	Score in Visual Style	STRATEGIES						
			DIRECT			INDIRECT			Overall
			Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
1.	E1	21	2.4	3.6	3.0	4.0	2.0	4.5	3.3
2.	E3	14	2.9	3.2	3.5	3.7	3.2	4.0	3.4
3.	A-1	12	2.9	2.0	2.2	4.1	2.5	2.7	2.7
4.	A-2	19	2.7	2.3	2.7	3.7	2.5	2.7	2.7
5.	A-4	13	3.0	2.6	3.5	3.1	2.4	2.6	2.7
6.	A-5	18	1.7	2.7	2.5	4.1	2.5	2.0	3.2
7.	A-7	14	3.1	3.0	2.0	4.2	2.3	2.5	3.0
8.	A-9	12	2.3	3.3	3.8	4.2	2.8	2.2	3.1
9.	A-10	14	3.0	3.6	2.7	4.4	3.7	3.5	3.6
10.	A-11	19	3.6	3.0	4.5	3.9	3.3	2.7	3.4
11.	B-6	20	4.4	3.9	3.8	4.1	3.8	4.8	4.0
12.	B-8	10	2.2	2.5	2.3	3.6	3.2	2.9	2.8
13.	B-10	20	2.6	2.4	3.2	2.8	2.8	2.8	2.6
14.	C-3	19	3.1	2.6	3.3	2.4	3	3.2	2.8
15.	C-5	19	3.0	3.0	2.2	2.0	2.8	2.2	2.4
16.	C-6	20	4.3	3.9	2.8	4.1	4.0	4.6	3.4
17.	C-7	10	2.9	2.9	3.2	3.5	2.6	3.0	2.7
18.	C-11	16	3.4	3.7	3.6	4.0	4.0	4.0	3.4
19.	C-13	22	3.6	3.8	4.2	4.2	4.0	4.0	3.9
20.	C-14	21	3.6	4.3	4.6	4.7	2.4	4.8	4.1
21.	C-15	33	2.9	3.2	2.8	2.5	2.2	2.0	2.7
22.	C-17	21	3.6	3.8	3.8	3.9	3.6	3.8	3.8
23.	C-18	14	2.9	3.2	4.2	3.6	3.8	2.8	3.4
24.	D-1	24	3.7	2.8	2.8	3.9	3.2	3.3	3.3

25.	D-6	16	2.1	3.3	3.2	3.8	2.8	2.8	3.0
26.	D-7	17	2.3	3.6	3.2	4.0	3.2	3.3	3.3
27.	D-10	17	2.3	2.6	2.7	3.1	2.5	3.0	2.5
28.	D-12	14	3.4	3.5	3.3	4.4	1.2	4.2	3.4
29.	D-13	18	3.3	4.0	3.3	4.6	1.7	3.0	3.5
30.	E-5	15	3.0	3.7	3.5	4.8	2.3	4.8	3.7
31.	E-6	11	2.9	2.9	4.3	3.3	3.0	2.0	3.0

2. Auditory Style

Quantity	Participant	Score in Auditory Style	STRATEGIES						
			DIRECT			INDIRECT			Overall
			Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
1.	A-1	11	2.9	2.0	2.2	4.1	2.5	2.7	2.7
2.	A-2	11	2.7	2.3	2.7	3.7	2.5	2.7	2.7
3.	A-4	14	3.0	2.6	3.5	3.1	2.4	2.6	2.7
4.	A-5	16	1.7	2.7	2.5	4.1	2.5	2.0	3.2
5.	A-6	16	3.7	3.5	3.3	3.8	2.0	3.0	3.3
6.	A-7	14	3.1	3.0	2.0	4.2	2.3	2.5	3.0
7.	A-8	22	3.4	3.1	3.0	4.2	2.8	3.3	3.4
8.	A-9	13	2.3	3.3	3.8	4.2	2.8	2.2	3.1
9.	A-11	19	3.6	3.0	4.5	3.9	3.3	2.7	3.4
10.	B-1	19	2.3	3.4	3.5	3.4	1.7	2.0	2.9
11.	B-2	15	2.9	3.1	2.8	3.5	3.8	3.0	3.2
12.	B-3	18	3.8	4.0	4.3	3.5	2.5	3.7	3.7
13.	B-4	19	3.4	3.6	4.4	3.7	2.7	2.8	3.6
14.	B-6	19	4.4	3.9	3.8	4.1	3.8	4.8	4.0
15.	B-7	13	2.9	4.1	4.5	4.8	3.2	4.8	4.0
16.	B-8	12	2.2	2.5	2.3	3.6	3.2	2.9	2.8
17.	B-10	20	2.6	2.4	3.2	2.8	2.8	2.8	2.6
18.	C-1	22	4.1	3.9	4.0	3.4	2.8	4.0	3.7
19.	C-6	21	4.3	3.9	2.8	4.1	4.0	4.6	3.4
20.	C-7	10	2.9	2.9	3.2	3.5	2.6	3.0	2.7
21.	C-8	18	3.2	3.9	4.8	4.5	3.8	3.6	3.5
22.	C-9	20	2.6	3.5	3.8	3.9	2.6	3.4	2.9
23.	C-10	18	3.6	3.1	3.7	4.1	3.6	4.4	3.1
24.	C-12	15	3.5	3.5	3.6	4.0	3.2	4.4	3.7
25.	C-18	14	2.9	3.2	4.2	3.6	3.8	2.8	3.4
26.	D-2	16	1.6	3.3	3.0	3.0	2.2	3.7	2.8
27.	D-3	22	3.3	3.6	4.2	4.2	3.7	3.2	3.7
28.	D-4	16	2.4	3.4	3.5	4.8	4.2	4.7	3.7
29.	D-8	14	2.8	3.3	3.8	3.4	3	2.7	3.2
30.	D-9	19	1.9	3.2	3.2	3.2	2.5	3.7	2.9
31.	D-14	14	2.5	4.5	4.8	4.3	2.8	2.8	3.8
32.	E-2	15	3.0	3.8	4.2	4.1	3.2	4.0	3.7
33.	E-3	14	2.9	3.2	3.5	3.7	3.2	4.0	3.4

34.	E-4	16	2.8	3.3	3.2	3.9	2.3	3.7	2.6
35.	E-5	15	3.0	3.7	3.5	4.8	2.3	4.8	3.7

3. Hands-on

Quantity	Participant	Score in Hands-on Style	STRATEGIES						
			DIRECT			INDIRECT			Overall
			Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
1.	A-1	11	2.9	2.0	2.2	4.1	2.5	2.7	2.7
2.	A-3	21	2.8	2.0	3.8	4.0	3.2	2.3	2.8
3.	A-4	15	3.0	2.6	3.5	3.1	2.4	2.6	2.7
4.	A-6	15	3.7	3.5	3.3	3.8	2.0	3.0	3.3
5.	A-7	16	3.1	3.0	2.0	4.2	2.3	2.5	3.0
6.	A-8	22	3.4	3.1	3.0	4.2	2.8	3.3	3.4
7.	A-10	13	3.0	3.6	2.7	4.4	3.7	3.5	3.6
8.	A-11	18	3.6	3.0	4.5	3.9	3.3	2.7	3.4
9.	B-2	13	2.9	3.1	2.8	3.5	3.8	3.0	3.2
10.	B-4	17	3.4	3.6	4.4	3.7	2.7	2.8	3.6
11.	B-5	13	3.4	4.0	3.5	4.1	3.8	3.7	3.7
12.	B-6	21	4.4	3.9	3.8	4.1	3.8	4.8	4.0
13.	B-7	13	2.9	4.1	4.5	4.8	3.2	4.8	4.0
14.	C-1	23	4.1	3.9	4.0	3.4	2.8	4.0	3.7
15.	C-2	20	3.6	3.1	4.0	3.8	3.7	3.2	3.5
16.	C-7	12	2.9	2.9	3.2	3.5	2.6	3.0	2.7
17.	C-8	20	3.2	3.9	4.8	4.5	3.8	3.6	3.5
18.	C-9	18	2.6	3.5	3.8	3.9	2.6	3.4	2.9
19.	C-10	18	3.6	3.1	3.7	4.1	3.6	4.4	3.1
20.	C-12	16	3.5	3.5	3.6	4.0	3.2	4.4	3.7
21.	C-13	20	3.6	3.8	4.2	4.2	4.0	4.0	3.9
22.	C-14	23	3.6	4.3	4.6	4.7	2.4	4.8	4.1
23.	C-16	22	3.1	3.9	3.4	5.0	3.0	4.2	3.9
24.	C-18	14	2.9	3.2	4.2	3.6	3.8	2.8	3.4
25.	D-3	20	3.3	3.6	4.2	4.2	3.7	3.2	3.7
26.	D-5	23	2.4	1.9	2.2	2.3	1.7	1.8	2.0
27.	D-9	17	1.9	3.2	3.2	3.2	2.5	3.7	2.9
28.	D-11	24	2.7	2.9	3.5	3.4	3.2	3.7	3.2
29.	D-12	14	3.4	3.5	3.3	4.4	1.2	4.2	3.4
30.	E-3	16	2.9	3.2	3.5	3.7	3.2	4.0	3.4
31.	E-4	15	2.8	3.3	3.2	3.9	2.3	3.7	2.6
32.	E-6	13	2.9	2.9	4.3	3.3	3.0	2.0	3.0

4. Extroverted

Quantity	Participant	Score in Extroverted Style	STRATEGIES						
			DIRECT			INDIRECT			Overall
			Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
1.	A-1	15	2.9	2.0	2.2	4.1	2.5	2.7	2.7
2.	A-2	17	2.7	2.3	2.7	3.7	2.5	2.7	2.7
3.	A-4	16	3.0	2.6	3.5	3.1	2.4	2.6	2.7
4.	A-5	16	1.7	2.7	2.5	4.1	2.5	2.0	3.2
5.	A-6	17	3.7	3.5	3.3	3.8	2.0	3.0	3.3
6.	A-7	20	3.1	3.0	2.0	4.2	2.3	2.5	3.0
7.	A-8	17	3.4	3.1	3.0	4.2	2.8	3.3	3.4
8.	A-9	25	2.3	3.3	3.8	4.2	2.8	2.2	3.1
9.	B-1	23	2.3	3.4	3.5	3.4	1.7	2.0	2.9
10.	B-2	14	2.9	3.1	2.8	3.5	3.8	3.0	3.2
11.	B-4	21	3.4	3.6	4.4	3.7	2.7	2.8	3.6
12.	B-5	15	3.4	4.0	3.5	4.1	3.8	3.7	3.7
13.	B-6	26	4.4	3.9	3.8	4.1	3.8	4.8	4.0
14.	B-7	18	2.9	4.1	4.5	4.8	3.2	4.8	4.0
15.	B-8	22	2.2	2.5	2.3	3.6	3.2	2.9	2.8
16.	B-10	17	2.6	2.4	3.2	2.8	2.8	2.8	2.6
17.	C-1	12	4.1	3.9	4.0	3.4	2.8	4.0	3.7
18.	C-2	15	3.6	3.1	4.0	3.8	3.7	3.2	3.5
19.	C-3	17	3.1	2.6	3.3	2.4	3	3.2	2.8
20.	C-4	12	3.8	3.8	4.0	4.4	4.0	4.2	3.5
21.	C-5	13	3.0	3.0	2.2	2.0	2.8	2.2	2.4
22.	C-6	21	4.3	3.9	2.8	4.1	4.0	4.6	3.4
23.	C-7	18	2.9	2.9	3.2	3.5	2.6	3	2.7
24.	C-8	21	3.2	3.9	4.8	4.5	3.8	3.6	3.5
25.	C-9	18	2.6	3.5	3.8	3.9	2.6	3.4	2.9
26.	C-10	18	3.6	3.1	3.7	4.1	3.6	4.4	3.1
27.	C-11	14	3.4	3.7	3.6	4.0	4.0	4.0	3.4
28.	C-12	14	3.5	3.5	3.6	4.0	3.2	4.4	3.7
29.	C-14	21	3.6	4.3	4.6	4.7	2.4	4.8	4.1
30.	C-15	22	2.9	3.2	2.8	2.5	2.2	2	2.7
31.	C-16	22	3.1	3.9	3.4	5.0	3.0	4.2	3.9
32.	C-17	25	3.6	3.8	3.8	3.9	3.6	3.8	3.8
33.	C-18	17	2.9	3.2	4.2	3.6	3.8	2.8	3.4
34.	D-1	15	3.7	2.8	2.8	3.9	3.2	3.3	3.3
35.	D-2	24	1.6	3.3	3.0	3.0	2.2	3.7	2.8
36.	D-3	18	3.3	3.6	4.2	4.2	3.7	3.2	3.7
37.	D-4	22	2.4	3.4	3.5	4.8	4.2	4.7	3.7
38.	D-5	22	2.4	1.9	2.2	2.3	1.7	1.8	2.0
39.	D-6	16	2.1	3.3	3.2	3.8	2.8	2.8	3.0
40.	D-7	14	2.3	3.6	3.2	4.0	3.2	3.3	3.3
41.	D-8	23	2.8	3.3	3.8	3.4	3.0	2.7	3.2

42.	D-9	16	1.9	3.2	3.2	3.2	2.5	3.7	2.9
43.	D-12	15	3.4	3.5	3.3	4.4	1.2	4.2	3.4
44.	D-13	17	3.3	4.0	3.3	4.6	1.7	3.0	3.5
45.	D-14	23	2.5	4.5	4.8	4.3	2.8	2.8	3.8
46.	E-1	14	2.4	3.6	3.0	4.0	2.0	4.5	3.3
47.	E-2	20	3.0	3.8	4.2	4.1	3.2	4.0	3.7
48.	E-3	18	2.9	3.2	3.5	3.7	3.2	4.0	3.4
49.	E-4	19	2.8	3.3	3.2	3.9	2.3	3.7	2.6
50.	E-5	17	3.0	3.7	3.5	4.8	2.3	4.8	3.7
51.	E-6	26	2.9	2.9	4.3	3.3	3.0	2.0	3.0

5. Introverted

Quantity	Participant	Score in Introverted Style	STRATEGIES						
			DIRECT			INDIRECT			Overall
			Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
1.	A-1	16	2.9	2.0	2.2	4.1	2.5	2.7	2.7
2.	A-3	20	2.8	2.0	3.8	4	3.2	2.3	2.8
3.	A-6	18	3.7	3.5	3.3	3.8	2.0	3.0	3.3
4.	A-10	20	3.0	3.6	2.7	4.4	3.7	3.5	3.6
5.	A-11	23	3.6	3.0	4.5	3.9	3.3	2.7	3.4
6.	B-2	13	2.9	3.1	2.8	3.5	3.8	3.0	3.2
7.	B-3	17	3.8	4.0	4.3	3.5	2.5	3.7	3.7
8.	B-10	16	2.6	2.4	3.2	2.8	2.8	2.8	2.6
9.	C-1	19	4.1	3.9	4.0	3.4	2.8	4.0	3.7
10.	C-2	13	3.6	3.1	4.0	3.8	3.7	3.2	3.5
11.	C-4	13	3.8	3.8	4.0	4.4	4.0	4.2	3.5
12.	C-5	12	3.0	3.0	2.2	2.0	2.8	2.2	2.4
13.	C-13	21	3.6	3.8	4.2	4.2	4.0	4.0	3.9
14.	D-1	14	3.7	2.8	2.8	3.9	3.2	3.3	3.3
15.	D-3	18	3.3	3.6	4.2	4.2	3.7	3.2	3.7
16.	D-9	18	1.9	3.2	3.2	3.2	2.5	3.7	2.9
17.	D-10	21	2.3	2.6	2.7	3.1	2.5	3	2.5
18.	D-11	20	2.7	2.9	3.5	3.4	3.2	3.7	3.2
19.	D-12	16	3.4	3.5	3.3	4.4	1.2	4.2	3.4
20.	E-1	14	2.4	3.6	3.0	4.0	2.0	4.5	3.3

6. Intuitive

Quantity	Participant	Score in Intuitive Style	STRATEGIES						
			DIRECT			INDIRECT			Overall
			Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
1.	A-1	20	2.9	2.0	2.2	4.1	2.5	2.7	2.7
2.	A-2	13	2.7	2.3	2.7	3.7	2.5	2.7	2.7
3.	A-3	22	2.8	2.0	3.8	4.0	3.2	2.3	2.8
4.	A-4	24	3.0	2.6	3.5	3.1	2.4	2.6	2.7
5.	A-5	23	1.7	2.7	2.5	4.1	2.5	2.0	3.2
6.	A-6	23	3.7	3.5	3.3	3.8	2.0	3.0	3.3
7.	A-7	20	3.1	3.0	2.0	4.2	2.3	2.5	3.0
8.	A-9	20	2.3	3.3	3.8	4.2	2.8	2.2	3.1
9.	A-11	29	3.6	3.0	4.5	3.9	3.3	2.7	3.4
10.	B-1	23	2.3	3.4	3.5	3.4	1.7	2.0	2.9
11.	B-2	16	2.9	3.1	2.8	3.5	3.8	3.0	3.2
12.	B-3	21	3.8	4.0	4.3	3.5	2.5	3.7	3.7
13.	B-4	24	3.4	3.6	4.4	3.7	2.7	2.8	3.6
14.	B-6	18	4.4	3.9	3.8	4.1	3.8	4.8	4.0
15.	B-8	17	2.2	2.5	2.3	3.6	3.2	2.9	2.8
16.	B-10	19	2.6	2.4	3.2	2.8	2.8	2.8	2.6
17.	C-1	23	4.1	3.9	4.0	3.4	2.8	4.0	3.7
18.	C-2	21	3.6	3.1	4.0	3.8	3.7	3.2	3.5
19.	C-3	9	3.1	2.6	3.3	2.4	3.0	3.2	2.8
20.	C-4	17	3.8	3.8	4.0	4.4	4.0	4.2	3.5
21.	C-5	25	3.0	3.0	2.2	2.0	2.8	2.2	2.4
22.	C-8	21	3.2	3.9	4.8	4.5	3.8	3.6	3.5
23.	C-9	18	2.6	3.5	3.8	3.9	2.6	3.4	2.9
24.	C-10	21	3.6	3.1	3.7	4.1	3.6	4.4	3.1
25.	C-12	22	3.5	3.5	3.6	4.0	3.2	4.4	3.7
26.	C-13	24	3.6	3.8	4.2	4.2	4.0	4.0	3.9
27.	C-14	24	3.6	4.3	4.0	4.7	2.4	4.8	4.1
28.	C-16	20	3.1	3.9	3.4	5.0	3.0	4.2	3.9
29.	C-17	20	3.6	3.8	3.8	3.9	3.6	3.8	3.8
30.	C-18	22	2.9	3.2	4.2	3.6	3.8	2.8	3.4
31.	D-1	16	3.7	2.8	2.8	3.9	3.2	3.3	3.3
32.	D-2	20	1.6	3.3	3.0	3.0	2.2	3.7	2.8
33.	D-5	21	2.4	1.9	2.2	2.3	1.7	1.8	2.0
34.	D-6	21	2.1	3.3	3.2	3.8	2.8	2.8	3.0
35.	D-7	15	2.3	3.6	3.2	4.0	3.2	3.3	3.3
36.	D-8	20	2.8	3.3	3.8	3.4	3.0	2.7	3.2
37.	D-9	12	1.9	3.2	3.2	3.2	2.5	3.7	2.9
38.	D-10	26	2.3	2.6	2.7	3.1	2.5	3.0	2.5
39.	D-12	20	3.4	3.5	3.3	4.4	1.2	4.2	3.4
40.	D-13	21	3.3	4.0	3.3	4.6	1.7	3.0	3.5
41.	D-14	23	2.5	4.5	4.8	4.3	2.8	2.8	3.8

42.	E-1	16	2.4	3.6	3.0	4.0	2.0	4.5	3.3
43.	E-5	21	3.0	3.7	3.5	4.8	2.3	4.8	3.7
44.	E-6	21	2.9	2.9	4.3	3.3	3.0	2.0	3.0

7. Concrete-Sequential

Quantity	Participant	Score in Concrete-Sequential Style	STRATEGIES						
			DIRECT			INDIRECT			Overall
			Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
1.	A-2	14	2.7	2.3	2.7	3.7	2.5	2.7	2.7
2.	A-3	20	2.8	2.0	3.8	4.0	3.2	2.3	2.8
3.	A-8	20	3.4	3.1	3.0	4.2	2.8	3.3	3.4
4.	A-9	18	2.3	3.3	3.8	4.2	2.8	2.2	3.1
5.	A-10	16	3.0	3.6	2.7	4.4	3.7	3.5	3.6
6.	B-1	21	2.3	3.4	3.5	3.4	1.7	2.0	2.9
7.	B-3	19	3.8	4.0	4.3	3.5	2.5	3.7	3.7
8.	B-5	17	3.4	4.0	3.5	4.1	3.8	3.7	3.7
9.	B-6	20	4.4	3.9	3.8	4.1	3.8	4.8	4.0
10.	B-7	18	2.9	4.1	4.5	4.8	3.2	4.8	4.0
11.	B-8	17	2.2	2.5	2.3	3.6	3.2	2.9	2.8
12.	B-10	21	2.6	2.4	3.2	2.8	2.8	2.8	2.6
13.	C-3	10	3.1	2.6	3.3	2.4	3	3.2	2.8
14.	C-4	15	3.8	3.8	4.0	4.4	4.0	4.2	3.5
15.	C-6	21	4.3	3.9	2.8	4.1	4.0	4.6	3.4
16.	C-7	25	2.9	2.9	3.2	3.5	2.6	3.0	2.7
17.	C-8	21	3.2	3.9	4.8	4.5	3.8	3.6	3.5
18.	C-9	17	2.6	3.5	3.8	3.9	2.6	3.4	2.9
19.	C-10	20	3.6	3.1	3.7	4.1	3.6	4.4	3.1
20.	C-11	15	3.4	3.7	3.6	4.0	4.0	4.0	3.4
21.	C-15	17	2.9	3.2	2.8	2.5	2.2	2.0	2.7
22.	D-1	17	3.7	2.8	2.8	3.9	3.2	3.3	3.3
23.	D-3	22	3.3	3.6	4.2	4.2	3.7	3.2	3.7
24.	D-4	27	2.4	3.4	3.5	4.8	4.2	4.7	3.7
25.	D-7	15	2.3	3.6	3.2	4.0	3.2	3.3	3.3
26.	D-9	13	1.9	3.2	3.2	3.2	2.5	3.7	2.9
27.	D-11	21	2.7	2.9	3.5	3.4	3.2	3.7	3.2
28.	D-13	19	3.3	4.0	3.3	4.6	1.7	3.0	3.5
29.	D-14	25	2.5	4.5	4.8	4.3	2.8	2.8	3.8
30.	E-1	14	2.4	3.6	3.0	4.0	2.0	4.5	3.3
31.	E-2	18	3.0	3.8	4.2	4.1	3.2	4.0	3.7
32.	E-3	17	2.9	3.2	3.5	3.7	3.2	4.0	3.4
33.	E-4	20	2.8	3.3	3.2	3.9	2.3	3.7	2.6

8. Closure-Oriented

Quantity	Participant	Score in Closure-Oriented Style	STRATEGIES						
			DIRECT			INDIRECT			Overall
			Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
1.	A-1	22	2.9	2.0	2.2	4.1	2.5	2.7	2.7
2.	A-2	17	2.7	2.3	2.7	3.7	2.5	2.7	2.7
3.	A-4	18	3.0	2.6	3.5	3.1	2.4	2.6	2.7
4.	A-5	23	1.7	2.7	2.5	4.1	2.5	2.0	3.2
5.	A-6	22	3.7	3.5	3.3	3.8	2.0	3.0	3.3
6.	A-7	20	3.1	3.0	2.0	4.2	2.3	2.5	3.0
7.	A-8	15	3.4	3.1	3.0	4.2	2.8	3.3	3.4
8.	A-9	14	2.3	3.3	3.8	4.2	2.8	2.2	3.1
9.	A-10	22	3.0	3.6	2.7	4.4	3.7	3.5	3.6
10.	A-11	22	3.6	3.0	4.5	3.9	3.3	2.7	3.4
11.	B-1	21	2.3	3.4	3.5	3.4	1.7	2.0	2.9
12.	B-4	19	3.4	3.6	4.4	3.7	2.7	2.8	3.6
13.	B-5	18	3.4	4.0	3.5	4.1	3.8	3.7	3.7
14.	B-6	23	4.4	3.9	3.8	4.1	3.8	4.8	4.0
15.	B-7	26	2.9	4.1	4.5	4.8	3.2	4.8	4.0
16.	B-8	18	2.2	2.5	2.3	3.6	3.2	2.9	2.8
17.	B-10	19	2.6	2.4	3.2	2.8	2.8	2.8	2.6
18.	C-1	19	4.1	3.9	4.0	3.4	2.8	4.0	3.7
19.	C-2	15	3.6	3.1	4.0	3.8	3.7	3.2	3.5
20.	C-3	16	3.1	2.6	3.3	2.4	3	3.2	2.8
21.	C-4	15	3.8	3.8	4.0	4.4	4.0	4.2	3.5
22.	C-5	26	3.0	3.0	2.2	2.0	2.8	2.2	2.4
23.	C-6	25	4.3	3.9	2.8	4.1	4.0	4.6	3.4
24.	C-7	19	2.9	2.9	3.2	3.5	2.6	3.0	2.7
25.	C-10	20	3.6	3.1	3.7	4.1	3.6	4.4	3.1
26.	C-11	16	3.4	3.7	3.6	4.0	4.0	4.0	3.4
27.	C-12	17	3.5	3.5	3.6	4.0	3.2	4.4	3.7
28.	C-13	18	3.6	3.8	4.2	4.2	4.0	4.0	3.9
29.	C-14	26	3.6	4.3	4.6	4.7	2.4	4.8	4.1
30.	C-15	18	2.9	3.2	2.8	2.5	2.2	2.0	2.7
31.	C-16	13	3.1	3.9	3.4	5.0	3.0	4.2	3.9
32.	C-17	17	3.6	3.8	3.8	3.9	3.6	3.8	3.8
33.	C-8	18	2.9	3.2	4.2	3.6	3.8	2.8	3.4
34.	D-1	15	3.7	2.8	2.8	3.9	3.2	3.3	3.3
35.	D-2	14	1.6	3.3	3.0	3.0	2.2	3.7	2.8
36.	D-3	19	3.3	3.6	4.2	4.2	3.7	3.2	3.7
37.	D-4	20	2.4	3.4	3.5	4.8	4.2	4.7	3.7
38.	D-5	21	2.4	1.9	2.2	2.3	1.7	1.8	2.0
39.	D-6	17	2.1	3.3	3.2	3.8	2.8	2.8	3.0
40.	D-7	20	2.3	3.6	3.2	4.0	3.2	3.3	3.3
41.	D-8	16	2.8	3.3	3.8	3.4	3.0	2.7	3.2

42.	D-9	18	1.9	3.2	3.2	3.2	2.5	3.7	2.9
43.	D-10	18	2.3	2.6	2.7	3.1	2.5	3.0	2.5
44.	D-11	22	2.7	2.9	3.5	3.4	3.2	3.7	3.2
45.	D-12	25	3.4	3.5	3.3	4.4	1.2	4.2	3.4
46.	D-13	21	3.3	4.0	3.3	4.6	1.7	3.0	3.5
47.	D-14	19	2.5	4.5	4.8	4.3	2.8	2.8	3.8
48.	E-1	19	2.4	3.6	3.0	4.0	2.0	4.5	3.3
49.	E-2	20	3.0	3.8	4.2	4.1	3.2	4.0	3.7
50.	E-3	16	2.9	3.2	3.5	3.7	3.2	4.0	3.4
51.	E-4	22	2.8	3.3	3.2	3.9	2.3	3.7	2.6
52.	E-5	16	3.0	3.7	3.5	4.8	2.3	4.8	3.7
53.	E-6	16	2.9	2.9	4.3	3.3	3	2.0	3.0

9. Open

Quantity	Participant	Score in Open Style	STRATEGIES						
			DIRECT			INDIRECT			Overall
			Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
1.	A-3	17	2.8	2.0	3.8	4.0	3.2	2.3	2.8
2.	A-9	14	2.3	3.3	3.8	4.2	2.8	2.2	3.1
3.	B-2	15	2.9	3.1	2.8	3.5	3.8	3.0	3.2
4.	B-3	18	3.8	4.0	4.3	3.5	2.5	3.7	3.7
5.	C-2	17	3.6	3.1	4.0	3.8	3.7	3.2	3.5
6.	C-4	14	3.8	3.8	4.0	4.4	4.0	4.2	3.5
7.	C-8	18	3.2	3.9	4.8	4.5	3.8	3.6	3.5
8.	C-9	17	2.6	3.5	3.8	3.9	2.6	3.4	2.9
9.	C-13	18	3.6	3.8	4.2	4.2	4.0	4.0	3.9
10.	C-15	17	2.9	3.2	2.8	2.5	2.2	2.0	2.7
11.	C-16	13	3.1	3.9	3.4	5.0	3.0	4.2	3.9
12.	C-17	19	3.6	3.8	3.8	3.9	3.6	3.8	3.8
13.	D-2	12	1.6	3.3	3.0	3.0	2.2	3.7	2.8
14.	D-4	18	2.4	3.4	3.5	4.8	4.2	4.7	3.7

10. Global

Quantity	Participant	Score in Global Style	STRATEGIES						
			DIRECT			INDIRECT			Overall
			Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
1.	A-1	11	2.9	2.0	2.2	4.1	2.5	2.7	2.7
2.	A-2	16	2.7	2.3	2.7	3.7	2.5	2.7	2.7
3.	A-3	20	2.8	2.0	3.8	4.0	3.2	2.3	2.8
4.	A-4	21	3.0	2.6	3.5	3.1	2.4	2.6	2.7
5.	A-5	21	1.7	2.7	2.5	4.1	2.5	2.0	3.2
6.	A-6	16	3.7	3.5	3.3	3.8	2.0	3.0	3.3
7.	A-8	13	3.4	3.1	3.0	4.2	2.8	3.3	3.4
8.	A-9	15	2.3	3.3	3.8	4.2	2.8	2.2	3.1
9.	A-10	17	3.0	3.6	2.7	4.4	3.7	3.5	3.6
10.	A-11	22	3.6	3.0	4.5	3.9	3.3	2.7	3.4
11.	B-1	19	2.3	3.4	3.5	3.4	1.7	2.0	2.9
12.	B-3	26	3.8	4.0	4.3	3.5	2.5	3.7	3.7
13.	B-4	17	3.4	3.6	4.4	3.7	2.7	2.8	3.6
14.	B-5	19	3.4	4.0	3.5	4.1	3.8	3.7	3.7
15.	B-6	18	4.4	3.9	3.8	4.1	3.8	4.8	4.0
16.	B-7	21	2.9	4.1	4.5	4.8	3.2	4.8	4.0
17.	B-8	15	2.2	2.5	2.3	3.6	3.2	2.9	2.8
18.	B-10	17	2.6	2.4	3.2	2.8	2.8	2.8	2.6
19.	C-1	20	4.1	3.9	4.0	3.4	2.8	4.0	3.7
20.	C-2	22	3.6	3.1	4.0	3.8	3.7	3.2	3.5
21.	C-3	13	3.1	2.6	3.3	2.4	3	3.2	2.8
22.	C-4	18	3.8	3.8	4.0	4.4	4.0	4.2	3.5
23.	C-5	20	3.0	3.0	2.2	2.0	2.8	2.2	2.4
24.	C-6	23	4.3	3.9	2.8	4.1	4.0	4.6	3.4
25.	C-7	18	2.9	2.9	3.2	3.5	2.6	3.0	2.7
26.	C-8	24	3.2	3.9	4.8	4.5	3.8	3.6	3.5
27.	C-9	23	2.6	3.5	3.8	3.9	2.6	3.4	2.9
28.	C-10	21	3.6	3.1	3.7	4.1	3.6	4.4	3.1
29.	C-11	19	3.4	3.7	3.6	4.0	4.0	4.0	3.4
30.	C-12	17	3.5	3.5	3.6	4.0	3.2	4.4	3.7
31.	C-13	20	3.6	3.8	4.2	4.2	4.0	4.0	3.9
32.	C-14	17	3.6	4.3	4.6	4.7	2.4	4.8	4.14
33.	C-15	17	2.9	3.2	2.8	2.5	2.2	2.0	2.7
34.	C-16	18	3.1	3.9	3.4	5.0	3.0	4.2	3.9
35.	C-17	22	3.6	3.8	3.8	3.9	3.6	3.8	3.8
36.	C-18	21	2.9	3.2	4.2	3.6	3.8	2.8	3.4
37.	D-1	16	3.7	2.8	2.8	3.9	3.2	3.3	3.3
38.	D-2	24	1.6	3.3	3.0	3.0	2.2	3.7	2.8
39.	D-3	27	3.3	3.6	4.2	4.2	3.7	3.2	3.7
40.	D-4	22	2.4	3.4	3.5	4.8	4.2	4.7	3.7
41.	D-5	21	2.4	1.9	2.2	2.3	1.7	1.8	2.0

42.	D-6	13	2.1	3.3	3.2	3.8	2.8	2.8	3.0
43.	D-7	22	2.3	3.6	3.2	4.0	3.2	3.3	3.3
44.	D-8	19	2.8	3.3	3.8	3.4	3.0	2.7	3.2
45.	D-9	17	1.9	3.2	3.2	3.2	2.5	3.7	2.9
46.	D-10	13	2.3	2.6	2.7	3.1	2.5	3.0	2.5
47.	D-12	16	3.4	3.5	3.3	4.4	1.2	4.2	3.4
48.	D-13	22	3.3	4.0	3.3	4.6	1.7	3.0	3.5
49.	D-14	29	2.5	4.5	4.8	4.3	2.8	2.8	3.8
50.	E-1	13	2.4	3.6	3.0	4.0	2.0	4.5	3.3
51.	E-2	20	3.0	3.8	4.2	4.1	3.2	4.0	3.7
52.	E-3	15	2.9	3.2	3.5	3.7	3.2	4.0	3.4
53.	E-4	20	2.8	3.3	3.2	3.9	2.3	3.7	2.6
54.	E-5	18	3.0	3.7	3.5	4.8	2.3	4.8	3.7
55.	E-6	25	2.9	2.9	4.3	3.3	3.0	2.0	3.0

11. Analytic

Quantity	Participant	Score in Analytic Style	STRATEGIES						
			DIRECT			INDIRECT			Overall
			Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
1.	A-1	13	2.9	2.0	2.2	4.1	2.5	2.7	2.7
2.	A-6	14	3.7	3.5	3.3	3.8	2.0	3.0	3.3
3.	A-7	13	3.1	3.0	2.0	4.2	2.3	2.5	3.0
4.	A-8	13	3.4	3.1	3.0	4.2	2.8	3.3	3.4
5.	A-11	21	3.6	3.0	4.5	3.9	3.3	2.7	3.4
6.	B-2	16	2.9	3.1	2.8	3.5	3.8	3.0	3.2
7.	B-7	19	2.9	4.1	4.5	4.8	3.2	4.8	4.0
8.	C-1	21	4.1	3.9	4.0	3.4	2.8	4.0	3.7
9.	C-2	22	3.6	3.1	4.0	3.8	3.7	3.2	3.5
10.	C-3	12	3.1	2.6	3.3	2.4	3.0	3.2	2.8
11.	C-4	16	3.8	3.8	4.0	4.4	4.0	4.2	3.5
12.	C-12	15	3.5	3.5	3.6	4.0	3.2	4.4	3.7
13.	C-13	22	3.6	3.8	4.2	4.2	4.0	4.0	3.9
14.	C-15	17	2.9	3.2	2.8	2.5	2.2	2.0	2.7
15.	D-1	16	3.7	2.8	2.8	3.9	3.2	3.3	3.3
16.	D-6	14	2.1	3.3	3.2	3.8	2.8	2.8	3.0
17.	D-10	15	2.3	2.6	2.7	3.1	2.5	3.0	2.5
18.	D-11	18	2.7	2.9	3.5	3.4	3.2	3.7	3.2
19.	D-12	14	3.4	3.5	3.3	4.4	1.2	4.2	3.4
20.	E-1	13	2.4	3.6	3.0	4.0	2.0	4.5	3.3
21.	E-3	15	2.9	3.2	3.5	3.7	3.2	4.0	3.4

MEANS OF STRATEGY GROUPS FOR EACH LEARNING STYLE

3.5 – 5.0 high use
2.5 – 3.4 medium use

STYLES		MEANS OF DIRECT STRATEGIES			MEANS OF INDIRECT STRATEGIES			Overall
		Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
PHYSICAL	Visual	3.0	3.2	3.2	3.8	2.9	3.2	3.2
	Auditory	3.0	3.3	3.5	3.9	2.9	3.4	3.3
	Hands-on	3.2	3.3	3.6	3.9	3.0	3.4	3.3
SOCIAL	Extroverted	3.0	3.3	3.4	3.8	2.9	3.4	3.2
	Introverted	3.2	3.2	3.4	3.7	3.0	3.3	3.2
	Intuitive	3.0	3.2	3.5	3.8	2.8	3.2	3.2
HANDLING POSSIBLE TIES	Concrete-Sequential	3.0	3.4	3.5	3.9	3.1	3.5	3.3
	Closure-Oriented	3.0	3.3	3.4	3.8	2.9	3.4	3.3
	Open	3.0	3.4	3.7	3.9	3.3	3.4	3.4
APPROACHING TASKS	Global	3.0	3.3	3.5	3.8	2.9	3.4	3.3
	Analytic	3.2	3.2	3.3	3.8	2.9	3.5	3.3

DIFFERENCES BETWEEN STRATEGY GROUPS

Least Significant Difference (LSD) = 0.09

Strategy Group I	Strategy Group II	Difference	Interpretation	Proportion of the Difference
Metacognitive	Affective	0.86	high significant and meaningful difference	0.9
Metacognitive	Memory	0.77	high significant and meaningful difference	0.8
Metacognitive	Overall	0.55	high significant and meaningful difference	0.6
Metacognitive	Cognitive	0.54	high significant and meaningful difference	0.5
Compensation	Affective	0.49	high significant and meaningful difference	0.5
Social	Affective	0.41	medium significant difference	0.4
Social	Metacognitive	0.41	medium significant difference	0.4
Memory	Compensation	0.40	medium significant difference	0.4
Compensation	Metacognitive	0.37	medium significant difference	0.4
Affective	Overall	0.31	medium significant difference	0.3
Affective	Cognitive	0.31	medium significant difference	0.3
Memory	Social	0.31	medium significant difference	0.3
Memory	Cognitive	0.23	low significant difference	0.2
Memory	Overall	0.21	low significant difference	0.2
Compensation	Overall	0.18	low significant difference	0.2
Compensation	Cognitive	0.17	low significant difference	0.2
Social	Overall	0.10	not at all significant difference	0.1
Social	Cognitive	0.09	not at all significant difference	0.1
Memory	Affective	0.09	not at all significant difference	0.1
Compensation	Social	0.08	not at all significant difference	0.1
Cognitive	Overall	0.01	not at all significant difference	0.0

DESCRIPTIVE STATISTICS OF LEARNING STRATEGY USE FOR EACH LEARNING STYLE

1. Visual

	DIRECT STRATEGIES			INDIRECT STRATEGIES			Overall
	Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
Mean	3.0	3.2	3.2	3.8	2.9	3.2	3.2
Median	3.0	3.2	3.2	3.9	2.8	3.0	3.3
Mode	2.9	3.6	3.2	4.1	3.2	4.0	3.4
Standard Deviation	0.6	0.6	0.7	0.7	0.7	0.9	0.5
Range	2.7	2.3	2.6	2.8	2.8	2.8	1.7
Minimum	1.7	2.0	2.0	2.0	1.2	2.0	2.4
Maximum	4.4	4.3	4.6	4.8	4.0	4.8	4.1
Count	31	31	31	31	31	31	31

2. Auditory

	DIRECT STRATEGIES			INDIRECT STRATEGIES			Overall
	Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
Mean	3.0	3.3	3.5	3.9	2.9	3.4	3.3
Median	2.9	3.3	3.5	3.9	2.8	3.2	3.3
Mode	2.9	3.3	3.5	4.1	2.5	2.7	3.7
Standard Deviation	0.7	0.5	0.7	0.5	0.6	0.8	0.4
Range	2.8	2.5	2.8	2.0	2.5	2.8	1.4
Minimum	1.6	2.0	2.0	2.8	1.7	2.0	2.6
Maximum	4.4	4.5	4.8	4.8	4.2	4.8	4.0
Count	35	35	35	35	35	35	35

3. Hands-on

	DIRECT STRATEGIES			INDIRECT STRATEGIES			Overall
	Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
Mean	3.2	3.3	3.6	3.9	3.0	3.4	3.3
Median	3.1	3.3	3.6	4.0	3.1	3.5	3.4
Mode	2.9	3.5	3.5	4.1	3.2	3.7	3.4
Standard Deviation	0.5	0.6	0.7	0.5	0.7	0.8	0.5
Range	2.5	2.4	2.8	2.7	2.8	3.0	2.1
Minimum	1.9	1.9	2.0	2.3	1.2	1.8	2.0
Maximum	4.4	4.3	4.8	5.0	4.0	4.8	4.1
Count	32	32	32	32	32	32	32

4. Extraverted

	DIRECT STRATEGIES			INDIRECT STRATEGIES			Overall
	Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
Mean	3.0	3.3	3.4	3.8	2.9	3.4	3.2
Median	3.0	3.3	3.5	3.9	2.8	3.3	3.3
Mode	2.9	3.3	3.5	4.1	2.8	2.8	3.7
Standard Deviation	0.6	0.6	0.7	0.7	0.7	0.9	0.5
Range	2.8	2.6	2.8	3.0	3.0	3.0	2.1
Minimum	1.6	1.9	2.0	2.0	1.2	1.8	2.0
Maximum	4.4	4.5	4.8	5.0	4.2	4.8	4.1
Count	51	51	51	51	51	51	51

5. Introverted

	DIRECT STRATEGIES			INDIRECT STRATEGIES			Overall
	Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
Mean	3.2	3.2	3.4	3.7	3.0	3.3	3.2
Median	3.2	3.2	3.3	3.9	3.0	3.3	3.3
Mode	3.6	3.6	4.0	4.4	2.5	3.0	3.3
Standard Deviation	0.6	0.6	0.7	0.6	0.7	0.6	0.4
Range	2.2	2.0	2.3	2.4	2.8	2.3	1.5
Minimum	1.9	2.0	2.2	2.0	1.2	2.2	2.4
Maximum	4.1	4.0	4.5	4.4	4.0	4.5	3.9
Count	20	20	20	20	20	20	20

6. Intuitive

	DIRECT STRATEGIES			INDIRECT STRATEGIES			Overall
	Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
Mean	3.0	3.2	3.5	3.8	2.8	3.2	3.2
Median	3.0	3.3	3.5	3.9	2.8	3.0	3.3
Mode	3.6	3.5	3.8	4.1	2.5	2.8	2.8
Standard Deviation	0.6	0.6	0.7	0.6	0.7	0.8	0.5
Range	2.8	2.6	2.8	3.0	2.8	3.0	2.1
Minimum	1.6	1.9	2.0	2.0	1.2	1.8	2.0
Maximum	4.4	4.5	4.8	5.0	4.0	4.8	4.1
Count	44	44	44	44	44	44	44

7. Concrete-Sequential

	DIRECT STRATEGIES			INDIRECT STRATEGIES			Overall
	Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
Mean	3.0	3.4	3.5	3.9	3.9	3.9	3.9
Median	2.9	3.4	3.5	4.0	3.2	3.5	3.3
Mode	2.9	3.6	3.5	4.1	3.2	3.7	3.7
Standard Deviation	0.6	0.6	0.6	0.6	0.7	0.8	0.4
Range	2.5	2.5	2.5	2.4	2.5	2.8	1.4
Minimum	1.9	2.0	2.3	2.4	1.7	2.0	2.6
Maximum	4.4	4.5	4.8	4.8	4.2	4.8	4.0
Count	33	33	33	33	33	33	33

8. Closure-Oriented

	DIRECT STRATEGIES			INDIRECT STRATEGIES			Overall
	Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
Mean	3.0	3.3	3.4	3.8	2.9	3.4	3.3
Median	3.0	3.3	3.5	3.9	2.8	3.3	3.3
Mode	2.9	3.3	3.5	4.1	3.2	2.8	3.4
Standard Deviation	0.6	0.6	0.7	0.7	0.7	0.9	0.5
Range	2.8	2.6	2.8	3.0	3.0	3.0	2.1
Minimum	1.6	1.9	2.0	2.0	1.2	1.8	2.0
Maximum	4.4	4.5	4.8	5.0	4.2	4.8	4.1
Count	53	53	53	53	53	53	53

9. Open

	DIRECT STRATEGIES			INDIRECT STRATEGIES			Overall
	Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
Mean	3.0	3.4	3.7	3.9	3.3	3.4	3.4
Median	3.0	3.5	3.8	4.0	3.4	3.7	3.5
Mode	3.6	3.8	3.8	4.2	3.8	3.7	3.5
Standard Deviation	0.6	0.5	0.6	0.7	0.7	0.8	0.4
Range	2.2	2.0	2.0	2.5	2.0	2.7	1.2
Minimum	1.6	2.0	2.8	2.5	2.2	2.0	2.7
Maximum	3.8	4.0	4.8	5.0	4.2	4.7	3.9
Count	14	14	14	14	14	14	14

10. Global

	DIRECT STRATEGIES			INDIRECT STRATEGIES			Overall
	Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
Mean	3.0	3.3	3.5	3.8	2.9	3.4	3.3
Median	3.0	3.4	3.5	3.9	2.8	3.3	3.4
Mode	2.9	3.3	3.8	4.1	3.2	3.7	3.7
Standard Deviation	0.6	0.6	0.7	0.6	0.7	0.8	0.5
Range	2.8	2.6	2.6	3.0	3.0	3.0	2.1
Minimum	1.6	1.9	2.2	2.0	1.2	1.8	2.0
Maximum	4.4	4.5	4.8	5.0	4.2	4.8	4.1
Count	55	55	55	55	55	55	55

11. Analytic

	DIRECT STRATEGIES			INDIRECT STRATEGIES			Overall
	Memory	Cognitive	Compensation	Metacognitive	Affective	Social	
Mean	3.2	3.2	3.3	3.8	2.9	3.5	3.3
Median	3.1	3.2	3.3	3.9	3.0	3.3	3.3
Mode	2.9	3.5	3.3	3.8	3.2	3.0	3.4
Standard Deviation	0.5	0.5	0.7	0.6	0.7	0.8	0.4
Range	2.0	2.1	2.5	2.4	2.8	2.8	1.5
Minimum	2.1	2.0	2.0	2.4	1.2	2.0	2.5
Maximum	4.1	4.1	4.5	4.8	4.0	4.8	4.0
Count	21	21	21	21	21	21	21