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Full Length Research Paper

Training needs for faculty members: Towards achieving quality of University Education in the light of technological innovations

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The aim of this study was to identify training needs of university faculty members, in order to achieve the desired quality in the light of technological innovations. A list of training needs of faculty members was developed in terms of technological innovations in general, developing skills of faculty members in the use of technological innovations and promoting university faculty members in quality assurance skills. The study followed the descriptive-analytic design in presenting the literature. The data collection was based on a questionnaire developed to assess university faculty members' needs in four areas, these are: teaching, scientific research, community service and promoting quality assurance procedures. The participants were 135 university faculty members chosen from different Saudi universities. Results were statistically analyzed using SPSS. The results revealed the need for university faculty to be trained in the light of technological innovations. The study recommends a program for training faculty members, to use technological innovations, meet their scientific research needs, university teaching, and community service and meet course requirements in terms of quality standards and performance indicators.

Key words: Technological innovations, university education, university faculty members, training needs, quality management, community service, scientific research.

INTRODUCTION

University education is considered as a major consumer of modern technology as well as the regional and international changes in the areas of teaching, learning styles, scientific research and quality of education. This need to implement technological innovations is directed towards investment of knowledge and research to develop human resources, satisfy social needs and

create new specialties to face challenges in the modern era. The need for faculty training based on the use of innovative technology has emerged to enhance their abilities to face the demands of the labor market and employ quality standards of education in general and in their areas of specializations in particular (Altschuld and Kumar, 2002).

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Preparation and professional development of faculty members has gained the attention of educational institutions all over the world. Programs for upgrading their performance and providing the appropriate environment are provided to help them play their roles effectively. However, with globalization, knowledge, revolution and modern technology, a number of studies revealed that there are problems facing university education. These are the poor academic achievement level, failure and withdrawal. There are some other serious challenges faced by faculty members such as preparation, conducting scientific research and being able to solve community problems. The aim of the present study is to show how quality higher education can be achieved using innovative technology through the study of the following:

1. The strong impact of technological advancement on the field of education, its systems and methods.
2. The shift in the teacher's roles from the traditional to the role of facilitator and guide.
3. Lack of skills and experiences required for effective university teaching.
4. The advancement in developing training programs in various areas of teaching and learning.
5. The need for faculty members to be updated on scientific developments to help improve teaching quality.
6. The increasing number of students, which require increased use of technological innovations.

Thus, professional development of faculty as a basic requirement of improving quality of university education can be achieved through:

Self-development: This is based on a faculty member's effort to improve themselves by attending seminars, lectures, conferences, workshops, conducting researches and translation, etc.

Institutional-development: This is achieved through training workshops, seminars, researches and exchange visits with other universities organized by the institution.

Achievement of quality in university education comes with many challenges including the need for more reliance on technological innovations, increasing social demand on education, and the need to invest resources to cope with sustained development. Technological innovations are not objective; their efficacy lies in the way they are used by qualified and skilled faculty members in the teaching and learning process.

Results of a number of studies revealed some challenges and obstacles that are faced in the training of faculty members, particularly, those which are related to the use of innovative technology in higher education, are assumed to provide on one hand, a match between outcomes of education and the demands of the labor market, and employing it in conducting research and quality assurance procedures on the other.

In-service training programs which are designed for use inside the classroom include computer use, internet and designing web pages. Results of studies such as (Sopina and McNeill, 2015) indicated the mastery of the targeted skills. In order to assess the quality of the educational process including, students' method of learning, use of educational technology (distance learning, electronic learning and video-conferencing), teaching environment, learning and assessment, curricula and media. On these, survey of the viewpoints of the research participants on the quality of higher education was conducted (Alshaghдали et al., 2014).

In order to investigate in-service training and the use of programmed learning as one form of innovative technology, the study of Xian (2014) was conducted to examine training course in five USA states. Results revealed that only 5% of teachers use programmed learning. Results also indicated that effective employment of educational technology is closely related to the success of training. In addition, teachers need to blend computerized programs with other conventional courses. Measuring the effect of total quality assurance on creating the match between needs of labor market and educational outcomes was done in Hou et al. (2015) study. They indicated the importance of laying emphasis on the teaching jobs as a core point affecting quality of education in terms of decisions and policies. The study targeted a number of higher education institutions in Taiwan such as International Business Corporation and Engineering Institute.

Assessing training needs of faculty members regarding the use of innovative technology and the way this is related to achieving total quality seems to be an interest of many researchers. The study of Stukalina (2012) investigated the views of 352 faculty members through a 100 items questionnaire consisted of six aspects. These are; technology processes and curricula, design and plan for learning environment, education and curriculum, assessment, productivity and professional performance, and social and ethical issues. Results showed that 30.8% of colleges administrative systems provide faculty members the opportunities for using innovative technology. Results also indicated that the research participants are in need of training on twelve (12) innovative technologies such as use of internet, data display and presentation equipments and video conferencing.

Currently, the higher institutions are assigned important roles such as the continuous assessment of professional development needs of faculty members, demands of work place and bridging the gap between the educational outcomes, appealing for the demands of the community, commitment to quality standards in every activity conducted in campus and ways of overcoming drawbacks resulting from lack of using innovative educational technology (Elabeidy, 2009) Also, the use of innovative technology is considered one of the major factors which support quality and research activities in South Africa

(Manduna, 2014).

In the Kingdom of Saudi Arabia, like most countries all over the world, there is a growing interest in designing a model for quality control in higher education since the last decade. This seems important due to the increase in number of government and private universities and colleges. Also, due to the focus on developing faculty members' skills in using innovative technology, creative teaching methods and achieving quality standards (Al-shafei et al., 2015).

The views of (171) faculty members, towards the quality of teaching in higher education were investigated using a questionnaire by (Veiga-Simão, Flores, Barros, Fernandes, and Mesquita, 2015) Results indicated that, participants stressed that effective teaching rely on employing innovative technology and opportunities for professional development. Participants also feel satisfied about their teaching which creates interactive environment with students.

LITERATURE REVIEW

Training needs of faculty members

Training needs means the changes required in the skills, knowledge and behaviors of university faculty to achieve purposes and overcome difficulties. (Andronescu and Solomon, 2010) defines training needs as all of the changes required in the knowledge, skills, attitudes and experiences of an individual to get him fit to effectively fulfill the duties of his present job. needs are identified by (Boon, Lutz, and Marburger., 2015) as the knowledge, skills, attitudes and behaviors that need to be changed or modified at the trainee to cope with contemporary or development aspects. The following are some concepts related to training needs:

1. There are knowledge, attitudes and skills that need to be acquired, modified or changed.
2. They represent shortcomings in the target group
3. They require identification of human and technological innovations and of problems that need training.
4. They entail constant revision of reality to reach maturity and self-evaluation.

So, training needs represent the difference between the present reality of a faculty member's performance and what should this performance be in future in order to face changes and developments in knowledge, skills, attitudes and abilities.

The importance of identifying training needs

Training needs are identified on a scientific basis to help the training program planners design effective programs that will help achieve realistic and well-defined objectives

(Florian and Hegarty, 2004). Haesner et al. (2015) points out that identifying professional needs is essential for any successful training process. Training needs represent the primary element in a successful training program if well-defined.

Pop and David (2009) also confirms training needs as the initial step of building and designing any successful training program. (Mohamed and Osman, 2014) has justified the importance of identifying training needs for the following purposes:

1. Designing training programs.
2. Help focus on improvement of performance.
3. Directing trainees and identifying the types of training and expected outcomes.
4. Overcome the problems of wasting money effort and time.

Since identifying training needs is an organized survey based on co-operative effort by members of the organization to eliminate the gap between target objectives and reality, many related institutions also take part in the process (Kaufman, Hughes, and Riccio, 2010).

Benefits of identifying staff training needs

1. Building training plans.
2. Identifying training objectives.
3. Designing training programs directed towards achievement of objectives.
4. Improving training effectiveness.
5. Identifying staff performance problems and difficulties.
6. Involving staff in community service.
7. Helping trainers design programs that satisfy needs of trainees (Chan, 2010).
8. Effective planning of training programs activities.
9. Defining assessment criteria of training programs.
10. Raising efficiency of university education.

In the light of these benefits, the present research aims at identifying university faculty training needs in order to improve their skills and knowledge using innovative technology.

QUALITY IN UNIVERSITY EDUCATION

Keçetep and Özkan (2014) identify quality as a set of standards and criteria that need to be present at all aspects of university education including incomes and outcomes in order to satisfy individual and social needs through the effective investment of all human and material resources. (Ozcan, 2013) also confirms that quality is one of the essentials of teaching improvement and performance development.

Liu (2015) in a study conducted in three Chinese universities identified three aspects of quality in higher

education, the academic, the social, and the individual. The core of quality is to satisfy users' needs, identify aims and specify the product quality requirements known as the qualitative quality of the product.

Requirements of quality achievement in higher education

In order to achieve the aim of qualitative education in higher institutions, the following essential steps must be taken: (Inskipp, 2004).

1. Support of quality management system
2. Establishing a culture of quality among members of the institution.
3. Developing university human resources and updating curricula.
4. Involving all faculty members in performance improvement.
5. Identifying needs of stakeholders inside and outside the educational institution.
6. Practicing self-evaluation effectively (Yunna et al., 2014)
7. Developing a system for data gathering to help make sound decisions.
8. Involving all concerned staff in plans of quality achievement.

Challenges facing quality in higher education

1. The absence of market competitiveness of university graduates.
2. The poor learning outcomes in some specializations.
3. Unemployment of higher education graduates due to poor skills and abilities.
4. Over-emphasis on rules and regulations.
5. Dominance of traditional methods of teaching encouraging memorization over analysis and creativity. Such obstacles have directly affected the effectiveness of university education for the following reasons:
6. Neglecting the use of educational technology.
7. The gap between results of scientific research and applications in society.
8. Lack of interaction between university and society.
9. Mismatch between university learning outcomes and community needs.
10. Emphasis on quantity over quality in academic preparation of graduates (Lytras et al., 2010).

Benefits of adopting quality measures in University Education

1. Establishing quality control systems that can improve review and develop courses.
2. Focusing efforts on satisfying actual needs of society and labor market.

3. Building a set of organizational frameworks that work on achievement of quality.
4. Constant improvement of academic performance.
5. Overcoming effects of lack of competitiveness of graduates in labor market.
6. Satisfying needs and facing social problems.
7. Improving quality of services.
8. Raising the levels of performance.

Criteria of quality control in education as identified by Mohamed and Osman (2014)

1. Formulation of objectives: general/specific, knowledge, skills and attitudes.
2. Course design: study plans- course description- evaluation.
3. Teaching and learning: methods, techniques, strategies, and technology.
4. Faculty members: quality- quantity- ratio of students to staff.
5. Learning resources: library- databases- labs- equipment- websites.
6. Internet.
7. Students' evaluations: tests.
8. Students' portfolios: course descriptions, course reports, student activities sample, and course plans.
9. Quality assurance: educational development, quality guides, internal assessment.
10. Supportive services: psychological guidance, academic guidance, and medical care.

TECHNOLOGICAL INNOVATIONS

Higher education has recently witnessed a great development as a result of technology use on both the levels of concepts and application. The traditional role of the teacher has changed into both facilitator and organizer in the learning environment in order to achieve quality. The teacher performs these roles relying mainly on innovative technology (electronic library, multi-media, computer-assisted learning, individualization of learning, learning resources center, open university, distant learning, video-conferencing and web-conferencing). (Stukalina, 2012) confirms that faculty member's acquaintance with concepts related to modern technology helps him develop the ability and skills to use it in teaching.

Innovative technology is a comprehensive system involving all items of modern technology: equipment, programs, learning environments and methods in order to improve quality of the learning process (Al-Naggar, 2009). Thus, the innovative item of technology has two aspects: the material one involving equipment and programs and the second involving the strategies and methods used (Stukalina, 2012).

The present study identifies innovative technology as a

comprehensive system of effective use of modern technology including equipment, materials, programs and teaching strategies used to match the nature of course content in order to develop the educational system through interaction between learners, teachers and content.

Importance of using technology to develop teaching practice

1. Attracting learners' attention and overcoming distractors in the learning situation.
2. Employing students' senses to activate their learning potentials.
3. Developing learners' self-directed learning skills making learning more interactive and efficient.
4. Providing indirect communication environment relating learning to the world outside the classroom.
5. Achieving the principle of purposeful learning.
6. Providing a safe and organized learning environment (Guo and Lanb, 2010).
7. Developing cooperation and partnership skills.
8. Encouraging virtual interaction.
9. Applying learning mastery principles.
10. Raising learners' positivism and motivation.
11. Developing learners' creativity, curiosity and group-work skills.
12. Achievement of active learning and positive participation.

Characteristics of innovative technology

Innovative technology is characterized by some features essentially related to learning theories, and is designed and produced to match the nature of the educational process. (Casanova et al., 2011) identifies these characteristics as follows:

Interactivity: it is the ability to add the elements of action and reaction in the learning situation. The learners choose the media, the types of interaction, training, communication and feedback. Some of the technological innovations allowing this are: computer-assisted instruction, interactive multi-media, hypertext systems, live radio, direct TV, video-conferencing and network.

Individualization: it allows individualized learning according to abilities, skills and previous experiences. Some of the technological innovations allowing individualization are:

1. Computer-assisted learning.
2. Learning modules.
3. Audio tutorial systems.
4. Video tutorial systems.

5. Computer tutorial systems.
6. Personalized instruction.
7. Individually prescribed instruction.
8. Interactive video programs.

Diversity it means introducing educational content in different forms: visual, audio, using motion pictures or using computer and internet. Diversity provides varied alternatives and stimuli for learning such as written and audio texts, drawings, and graphics. (Khallaf-allah, 2010).

Cosmic: using technological innovations in conferences, forums and distant lecturing to serve the purposes of teaching, training and exchanging experiences.

Integration: The media is integrated in order to achieve the specified learning purpose. The suitable medium is chosen (whether visual, audio, drawings, cartoons, music or sound effects).

Accessibility: It means that the technological innovation is available at the time it is needed by the teacher and student (Griffith and Rubera, 2014).

Total quality management: This feature is related to the achieved quality of the design and production of the technological innovation on both the material and cognitive levels.

Factors of success in implementing innovative technology in universities

A group of elements need to be considered for successful use of technological innovations: (Sorensen, 2009).

1. Staff awareness of the technological innovations; it is important to study and understand the innovation, realize its components and potentials and how it can help achieve objectives and overcome obstacles.
2. Study of rewards and benefits before starting the planning process to guarantee the achievement of objectives of the educational institution.
3. Planning the use of technological innovations according to circumstances and available human and material resources at the institution.
4. Providing the suitable environment for the implementation of innovative technology.
5. Funding; identifying sources of funding and making sure of its availability in order to achieve required outcomes.
6. Providing academic professionals equipped with the experiences needed to use technological innovations.
7. Needs and financial support; the importance of establishing an infrastructure and the preparations needed to achieve objectives.

8. Periodical application at specified steps to reach intended objectives.
9. Trial of technological innovations to ensure its applicability and conformity with the course. Trial should start with small samples then to larger samples making use of trial results.
10. Training; use of a technological innovation are in three stages:
 - a. Identification; theoretical training of a large group to explain and show characteristics and potentials of a technological innovation.
 - b. Transformation; practical training on the skills involved in the use of the technological innovation.
 - c. Confirmation; training to confirm learning and solve problems.

The following are some of the problems facing current research

1. Lack of coordination between higher education institutions and society concerning planning and design of programs.
2. Weak correlation between higher education outputs and labor market requirements; as well as the lack of important basic experiences.
3. Innovative technology is a major pillar of quality in higher education.
4. The need for investigating strategies to be followed by higher institutions to assure the quality of academic outcomes to co-operate with community needs.
5. The importance of adopting quality standards in terms of communication and information technology.
6. Poor interest of the university in the use of innovative technology.
7. The need for faculty members to be trained on the use of innovative technology.
8. The need for designing training programs on use of innovative technology to meet changing needs of faculty members.
9. The needs of staff members to be trained on use of innovative technology to teach, developed research skills and offer consultations.
10. Lack of focus on effective teaching and use of modern methods of teaching.

RESEARCH PROBLEM (FACULTY MEMBERS IN SAUDI UNIVERSITIES ARE UNABLE TO ACHIEVE HIGH QUALITY EDUCATION DUE TO LACK OF USE OF INNOVATIVE TECHNOLOGY)

The present study investigates training needs of university faculty to achieve the desired quality in terms of innovative technology. The study attempts to answer the following research questions:

1. What are the training needs of university faculty

- members?
2. What standards need to be met in order to achieve quality in university education and how this relates training needs of faculty?
3. What are the technological innovations needed by university faculty members?

Research objectives

1. Improving university faculty skills in order to achieve quality in higher education.
2. Developing a list of training needs in the light of innovative technology (McConnell, 2003).
3. Achieving quality in higher education and how this is related to training needs of faculty members.
4. Meeting the needs of faculty members related to technological innovations.

METHODOLOGY

Research design

The quasi experimental design was employed to investigate the problem of research.

Research participants

One hundred and thirty five (135) faculty members were chosen from Saudi universities.

Data collection instruments

List of training needs

A primary list of university staff training needs was prepared based on:

1. A review of literature related to these aspects: training needs for teaching, training needs for research, training needs for community services and training needs for quality management.
2. A review of results of studies rere related to training needs.
3. Personal interviews with staff to identify their opinions concerning their training needs. They responded to the following questions:

- a. What are your training needs for teaching?
- b. What are your training needs for scientific research?
- c. What are your training needs for community service?
- d. What are your training needs for quality management?
- e. Consulting training specialists at the deanship on quality and development concerning staff training needs.
- f. Clear and specific statement of the items, and each item focus on one single need only.
- g. The list consists of four parts: teaching, scientific research, community service and quality management.
- h. Standardization of the questionnaire:

Face validity

To specify relatedness of item to the part it belongs to, the list was presented to 15 jurors in the areas included in the questionnaire:

Core One: Training needs for teaching:

1. Planning, preparation and execution (29) items.
2. Teaching methods and strategies (26) items.
3. Educational technology and learning resources (27) items.
4. Evaluation (42) items.
5. Indicators of teaching performance (21) items.
6. Learning outcomes (13) items.

Core Two: Training needs for scientific research (60) items.

Core Three: Training needs for community service (58) items.

Core Four: training needs for quality management (67) items.

Reliability of the list of training needs

For reliability, the list was to a group of 58 faculty members, quality and development consultants and quality administrators in Saudi universities. Alpha- Cronbach reliability was calculated and reached (0.89).

In the light of reliability and validity of the initial list, a final list was developed consisting of the following four cores:

1. Core One: Training needs for teaching (82 items).
 2. Core Two: Training needs for research (52 items).
 3. Core Three: Training needs for community service (55 items).
 4. Core Four: Training needs for quality management (67 items).
- Questionnaire was administered to (138) faculty member's to identify training needs.

Statistical analysis

SPSS program was used to calculate means, standard deviations, frequencies, standard error, variance and Chi-square.

The list of educational quality control standards: Based on the following:

1. A review of literature in the areas of total quality, curriculum and instruction.
2. A review of related studies
3. A list of 10 main criteria is prepared; statement of objectives- course design- teaching and learning- staff- learning resources and innovations- student evaluation- student portfolios- quality assurance- supportive services- management).
4. Regarding the achievement of teaching and learning objectives.
5. Standardizing the list of criteria according to the following procedures:

a) Face validity: the list of quality management was presented to a group of experts to decide its relatedness to the objectives.

b) Reliability of the list: after administering the list to a group of (24) staff, reliability factor was calculated using Alpha-Cronbach equation. It reached 0.90..

c) In the light of opinions of experts and reliability factor, a final version of the list was prepared and administered to a group of (37) university faculty.

d) Statistical analysis: SPSS program was used to calculate the means standard deviations, frequencies, standard error and variance.

List of technological innovations: Based on the following:

1. A review of related literature in order to prepare the list of technological innovations to be used in university education.
2. A review of studies related to technological innovations.

3. Taking into consideration that every item represents the core it belongs to.

4. Standardizing the list of technological innovations as follows:

a) Face Validity: The primary form of the list was presented to (13) faculty members specialized in technology. The list consisted of the following three cores:

Core One: Educational technology (10 items).

Core Two: Multimedia (29 items).

Core Three: Equipment for technological innovations (16 items).

b) Reliability of the List: the needs of 59 faculty member were assessed in terms of the list. Alpha-Cronbach formula was administered to test the reliability of responses of the participants, results (0.88).

c) In the light of the list reliability and validity, a final copy was prepared and administered to 95 faculty members from the Saudi universities.

d) Statistical analysis of data was conducted using SPSS program.

RESULTS AND DISCUSSION

Views of participants on training needs of faculty members

To answer this question, statistical analysis of the data obtained from the questionnaire of staff training needs was conducted using SPSS program. Means, standard deviations, standard error and variance were calculated as shown in Table 1.

Views of participants on training needs for teaching

Table 1 shows mean scores of staff responses to questionnaire items concerning training needs for teaching. Mean was (4.169) with standard deviation of (0.726) and percentage of (82.3%). This confirms the need for training on planning, execution and use of teaching strategies and evaluation methods. The value of Chi square was (41.3) which is significant at (0.01) implying.

Views of participants on training needs for scientific research

Table 1 provides mean scores of staff responses to questionnaire items concerning scientific research (4.339) which is considered high, with standard deviation of (0.703) and percentage of (86.5%). This means there is a high need for training on the skills, principles, ethics and techniques of writing scientific research. The value of Chi square was (44.3) which is significant at (0.01) level.

Views of participants on training needs for community service

Table 1 shows mean scores of staff responses to questionnaire items concerning community service (4.209) with standard deviation of 0.768 and percentage

Table 1. Means, standard deviations, standard error, variance and sum of squares for the four main cores of the questionnaire.

		Teaching needs	Research req.	Community service req.	Quality requirements
N	Valid	11070	7020	7425	9045
	Missing	0	0	0	0
Mean		4.1692	4.3390	4.2090	4.3051
Std. error of mean		0.00691	0.00840	0.00892	0.00758
Std. deviation		0.72686	0.70384	0.76842	0.72118
Variance		0.528	0.495	0.590	0.520
Sum		46153.00	30460.00	31252.00	38940.00

Table 2. Means, standard deviation, standard error, variance and Chi-square value.

Standards of quality		
N	Valid	370
	Missing	0
Mean		4.2973
Std. Error of Mean		0.03724
Std. Deviation		0.71624
Variance		0.513
Sum		1590.00

of 80.5% which represents a high need for training on strengthening ties between university and society. The value of Chi-square was 39.2 which is significant at 0.01 level, implying a high need for training on this aspect.

Views of participants on training needs for achieving high quality

Table 1 shows mean scores of staff responses to questionnaire items concerning quality management (4.305) with standard deviation of 0.721 and percentage of 79.2% representing a high need for training on quality management systems. The value of Chi-square was (38.1) which is significant at (0.01) level.

Views of participants on standards of achieving high quality university education and its relationship with training needs of faculty members

To answer this question, statistical analysis of the data related to achievement of quality in university education was conducted using SPSS program. Means, standard deviation, standard error, variance and Chi-square value were calculated as shown in Table 2.

Table 2 shows mean scores of staff responses to questionnaire items with regards to criteria of university quality management (4.297) with standard deviation of

0.716 and percentage of 83.4% which confirms the importance of these criteria. The value of Chi-square was 42.1 which is significant at 0.01 level.

Table 3 shows means, standard deviations, standard error and variance for standards of quality management. They were all significant at 0.01 level.

Views of participants

The innovative technology needed by faculty members

To answer this question, statistical analysis of the data related to technological innovations required by staff was conducted using SPSS program. Means, standard deviations, standard error, variance and Chi-square were calculated. Results are shown in Table 4.

Innovations related to educational technology: Table 4 shows mean scores of staff responses to the first core of technological innovations concerning educational technology (3.894), standard deviation (0.763) and percentage (76.5%) which confirms the importance of technological innovations related to educational technology (Internet- email- web design- learning groups- file compressing programs- concurrent communication- search engines- file download). The means for this part was high. Chi-square value was (38.7) which is

Table 3. Means, standard deviations, standard error and variance for standards of quality management. They are all significant at 0.01 level.

Criteria for quality management		Statement of objective	Course design	Teaching and learning	Staff	Learning resources and innovations	Students' evaluation	Students portfolios	Quality assurance	Supply services	Management
N	Valid	37	37	37	37	37	37	37	37	37	37
	Missing	0	0	0	0	0	0	0	0	0	0
Mean		4.324	4.29	4.32	4.216	4.162	4.297	4.405	4.270	4.48	4.18
Std. Error of Mean		0.128	0.133	0.122	0.103	0.131	0.115	0.081	0.113	0.099	0.138
Std. Deviation		0.783	0.811	0.747	0.629	0.799	0.701	0.497	0.693	0.606	0.844
Variance		0.614	0.659	0.559	0.396	0.640	0.492	0.248	0.480	0.368	0.713
Sum		160.0	159.0	1600.0	1560.0	1540.0	1590.0	1630.0	1580.0	1660.0	1550.0

Table 4. Means, standard deviations, standard error, variance and Chi-square.

		Educational information technology innovations	Innovations of multimedia shows	Innovations of educational equipment
N	Valid	950	2755	1520
	Missing	0	0	0
Mean		3.894	4.304	4.112
Std. Error of Mean		0.024	0.013	0.020
Std. Deviation		0.763	0.726	0.799
Variance		0.583	0.528	0.638
Sum		3700.00	11860.00	6251.00

significant at (0.01) level.

Innovations related to multimedia: Table 4 shows high mean scores of staff responses to the second core of technological innovations questionnaire concerning multimedia (4.304), standard deviation (0.726) and percentage 84.1% which confirms the importance of technological innovations related to multimedia (production of multimedia- design of multimedia presentations- interactive multimedia- photo shop- distant learning- mastery learning- learning management- open education- programmed instruction- electronic content management systems- virtual reality- hypertext systems- hypermedia systems- routing audio systems- individually prescribed systems). The value of Chi-square was (42.2) which is significant at 0.01 levels.

Innovations related to educational equipment: Table 4 shows mean scores of staff responses to the questionnaire items concerned with technological innovations related to educational equipment (4.112), with standard deviation (0.799) and percentage (75.4%). This emphasizes the importance of technological innovations related to educational equipment (data show projectors- Internet digital camera- video digital camera- digital camera- scanner- audio digital equipment- computers- interactive video- faximili- fax- video text- cell

phones- electronic blackboard). Chi-square value was (38) which is significant at 0.01 levels.

DISCUSSION

Results of question one: what are the technological innovations required by university faculty members?

Results from core one

Results show that staff need training in the area of teaching (planning- preparation- execution- teaching strategies- technology- learning resources- evaluation- teaching performance indicators- learning outputs). Mean of scores on the teaching core was (4.169), standard deviation (0.726) and percentage of (82.3%) (Figure 1). Chi-square value was (41.3) which is significant at 0.01 levels. Results agree with results of Xian study (2014) and Stukalina (2012) in the following points:

1. Emphasizing effective teaching strategies and developing staff skills and abilities
2. Encouraging creativity
3. Constant evaluation and variation of evaluation methods
4. Using innovative technology
5. Statement of objectives and methods of student

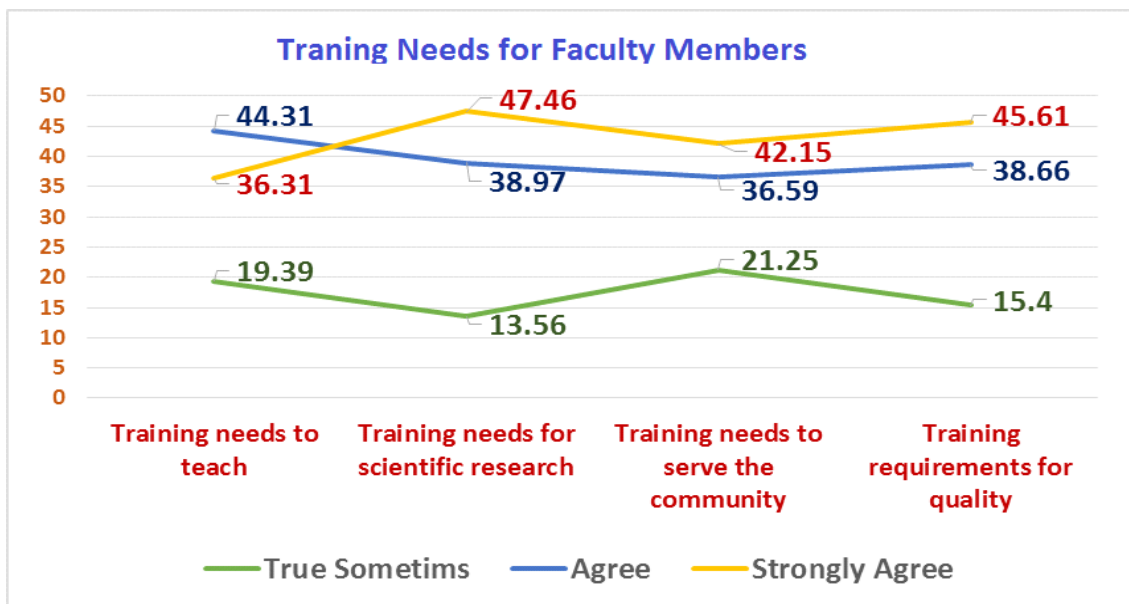


Figure 1. Percentages and frequencies of university faculty training needs.

motivation.

6. Involving computerized educational programs in curricula
7. Building teaching strategies based on innovative technology.

Results for core two

Results refer to staff training needs in the area of scientific research (principles and ethics- skills of writing research reports- statistical analysis of research data- using the digital library- scientific publication- building databases- applying scientific research regulations) Mean of scores of this core was (4.339) with standard deviation (0.703) and percentage of (86.5%) (Figure 1). The value of Chi-square was (44.3) which is significant at (0.01) level. Results indicate the importance of using innovative technology in scientific research to collect and deal with data. Results agree with findings from Xian study (2014) and Casanova et al., (2011) as follows:

1. Training on the skills and procedures of scientific research.
2. Focus on research that develop skills
3. Relating research to requirements of labor market.
4. Using technology in conducting research.

Results of core three

Results show training needs of staff in the area of community service (identifying social needs, planning

university activities to serve community, cooperation between organization and professional groups, providing training programs that match qualitative and quantitative requirements of labor market, raising awareness of the importance of work, encouraging investment in technical and professional training, treating labor market problems, continuous education programs to satisfy social needs and project management). Mean of scores for this core was (4.209) with standard deviation of (0.768) and percentage of (80.5%) (Figure 1). Chi-square value was (39.2) which is significant at (0.01) level. These results match the findings of Xian (2014) as follows:

1. Training on providing social consultations
2. Employing research findings to serve community
3. Staff participation with views, knowledge and experiences to serve community
4. Improving university outputs to serve labor market needs
5. There is a gap between outcomes and labor market due to negligence of innovative technology.
6. Poor contribution of education in building social knowledge.
7. Empowering the relationship between the academic product and social needs.

Results of core four

Results refer to staff training needs in the area of quality management (disseminating a culture of quality input, output and processes assessment; basics of educational programs evaluation; basics and mechanisms of

QUALITY STANDARDS TO ACHIEVE QUALITY IN HIGHER

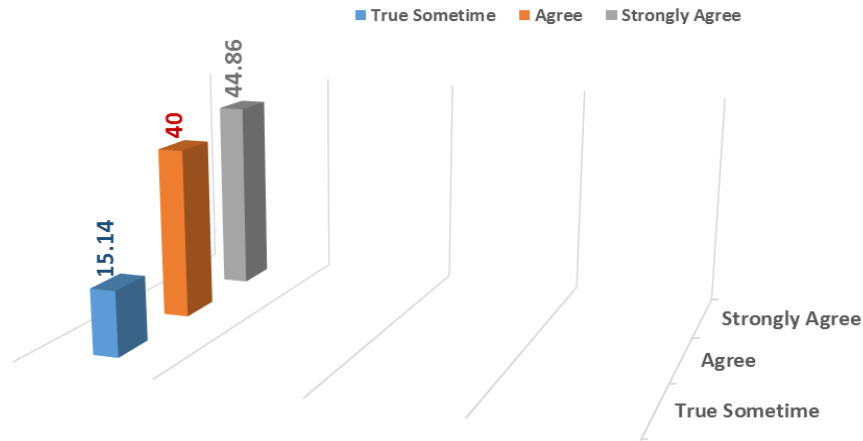


Figure 2. Percentages and frequencies of criteria of university quality management.

international accreditation; quality control; sustained development systems; improving learning outcomes; achievement of key performance indicators; referenced comparisons; applying total quality standards; preparing course specifications; preparing field practice specifications; preparing course reports; preparing program reports; preparing program for self-study; preparing institution's self-study; using technological innovations to achieve learning outcomes). Mean of scores was 4.305 with standard deviation of 0.721 and a percentage of 79.2% (Figure 1). Chi-square value was 38.1 which is significant at 0.01 level. Results agree with the findings of Xian study (2014) which are as follows:

1. Relating objectives of training programs to development of staff abilities to achieve quality standards.
2. Training on formulation of learning outcomes.
3. Building and designing tests according to teaching and learning requirements.
4. Improving staff abilities to integrate computerized programs in their courses.
5. Ability to relate learning outcomes to requirements of labor market.
6. Increasing interest in university quality in the light of communication and information technology.
7. Emphasizing evaluation methods as a guarantee of quality achievement.

Interpretation of results of question two: What are the criteria for the achievement of quality in university in relation to staff training needs?

Results of the statistical analysis of data acquired from questionnaire concerning achievement of university

qualitative quality in relation to training requirements revealed staff need to master: statement of objectives, course design, learning resources and innovations, methods of evaluation, student portfolios, quality assurance, supportive services and management. Mean of scores of responses was as high as 4.297 with standard deviation of 0.716 and a percentage of 83.4%. Chi-square value was 42.1 which is significant at 0.01 level (Figure 2). Results correlate with the findings of Al-Shafei et al. (2015), Stukalina (2012) and Elabeidy (2009):

1. Planning for learning environment
2. Variation in evaluation methods.
3. Analyzing staff skills, capabilities and attitudes.
4. Analyzing administrative and teaching tasks of staff.
5. There is a lack of reliance on technology in teaching.
6. The importance of quality management in achieving educational quality.
7. Identifying the strategies and mechanisms that can help academic institutions achieve quality outcomes to meet community needs.

Results of question three: What are the technological innovations required by university faculty?

Results confirm that staff need training on surveying the Internet, designing educational websites, file compressing, concurrent communication search engines, file upload and download in order to achieve qualitative quality of their teaching and research work and community service. Mean of scores was as high as 3.894 with standard deviation of 0.763 and a percentage of 76.5% which is significant at 0.01 level (Figure 3). Results

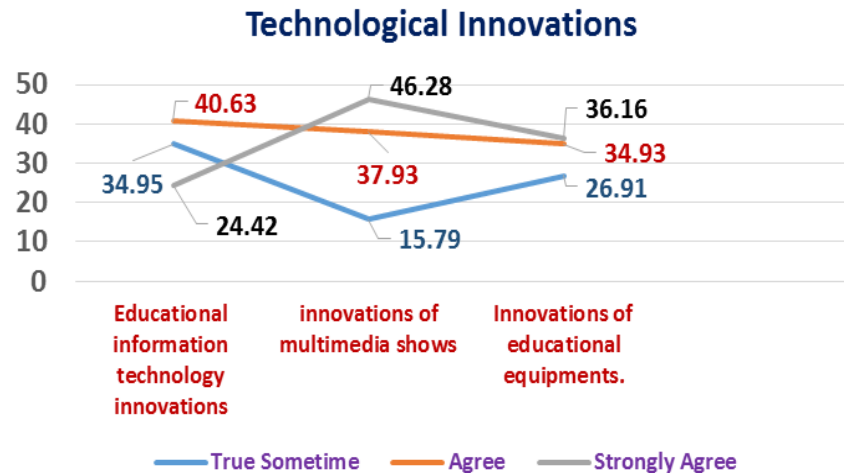


Figure 3. Percentages and frequencies related to technological innovations.

match findings from the studies of Manduna (2014), Stukalina (2012), Elabeidy (2009), in the following points:

1. Educational system lacks interest in information technology and industrial technology.
2. Training on information and communication technology
3. The need for training on web designing.
4. Lack of reliance on educational technology.

Discussion of results related to multimedia

Results of this core shows staff training needs on: producing multimedia, interactive multimedia, designing presentation, Photoshop, mastery learning, distance learning, communication technology, hypertext, virtual classes, etc. Mean of scores was (4.304) with standard deviation (0.726) and percentage of (84.1%). Chi-square value was (42.2) which is significant at (0.01) level. Results match results of Stukalina (2012) and Veiga-Simão et al. (2015) in:

1. Designing educational environment rich in technology and its products.
2. Training on preparing electronic books, computer programs, using the internet and designing web pages.
3. Multimedia packages.
4. Designing staff training programs to face the digital age and equip them with skills related to innovative technology.
5. Staff need of continuous training to manage virtual classes.
6. Training on teaching through video conferencing.
7. Training on planning learning environment.

Results related to educational equipment

Results revealed staff need for training on the use of:

projectors, Internet digital camera, video text, televised communication bank, tele-text, telex, electronic blackboard, and interactive video to achieve qualitative quality teaching, research, community service and quality management. Mean of scores was 4.112 with standard deviation of 0.799 and a percentage of 75.4%. Chi-square value was 38 which is significant at 0.01 level.

Results match the results of Stukalina (2012) and Veiga-Simão et al. (2015), in the following:

1. The most needed training is computer training.
2. Training on the use of data display equipment.
3. Developing the abilities to use technology in education and planning in learning environment and developing material, programs and equipment.
4. Graduates lack skills on how to use innovative technology due to the absence of a model

RECOMMENDATIONS

The present study recommends conducting training sessions that aim at promoting the quality of university faculty performance by using technological innovations including the following:

Training sessions to meet training needs for basic teaching skills as follows

1. Intended learning outcomes (cognitive, affective and psychomotor).
2. Psychomotor performance indicators to compare students' performance.
3. Ethics of teaching profession.
4. Content analysis and design skills.
5. Effective and innovative teaching methods.
6. Cooperative learning and problems solving skills.

7. Evaluation using portfolios: pre-, post, formative and peer evaluation.
8. Design and production of learning packages.
9. Course design according to international standards.
10. Using multimedia innovations.
11. Innovative teaching equipment.
12. Using innovative communication and information technology.

Training sessions for scientific research needs as follows:

1. Ethics of scientific research.
2. Using the internet for scientific research purposes.
3. Research report writing skills.
4. Statistical analysis of research data.
5. Using the digital library.
6. Scientific journal editing and publication procedures.
7. Scientific research and project management.
8. Use of multimedia innovations.
9. Innovative educational equipment.
10. Using innovative communication and information technology.

Training sessions for community service needs as follows:

1. Vocational planning and human resources management.
2. Planning, execution, follow-up and evaluation of training sessions and programs to promote communication and integration between universities and social institutions.
3. Developing social work systems and solving social problems through scientific research and social participation.
4. Raising awareness of social issues.
5. Obtaining knowledge in the areas of science and technology in and outside the university.
6. Using multimedia innovations.
7. Using communication and information technology innovations.

Training sessions for quality management needs as follows:

1. Time management and conferencing skills.
2. Course and program design (including content, methods of teaching and technology).
3. Basics and mechanisms of quality assurance and international accreditation.
4. Systems of sustained development of staff scientific research skills and abilities.
5. Methods of teaching as specified by major universities.
6. Key performance indicators and referenced comparisons.

7. Using technological innovations to achieve learning outcomes.
8. Strategic planning.
9. Preparing course and program descriptions.
10. Preparing course and program reports.
11. Preparing program and institution self-study.
12. Video-conferencing.
13. Using multimedia innovations.
14. Innovative teaching equipment.
15. Using communication and information technology innovations.

Conflict of Interests

The authors have not declared any conflict of interests.

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Full Length Research Paper

An instrument for measuring performance in geometry based on the van Hiele model

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In this paper we present the process of constructing a test for assessing student performance in geometry corresponding to the first year of Secondary Education. The main goal was to detect student errors in the understanding of geometry in order to develop a proposal according to the Van Hiele teaching model, explained in this paper. Our research methodology took into account reliability using Cronbach's alpha coefficient, as well as the construct validity, with the extraction of 13 factors that accounted for a high percentage of variance. This result leads us to conclude that the instrument constructed has the appropriate technical and pedagogical features to be considered an original and significant contribution to the field of geometry teaching. The final version of the test constructed after the extraction of factors is shown in the Appendix.

Key words: Assessment, geometric concepts, mathematics curriculum, research, Van Hiele Model.

INTRODUCTION

Although there have been continuous changes in Mathematics teaching in Spain since 1970, perhaps the greatest transformation lies in our way of understanding how to construct geometric thinking in the classroom. Currently, learning is conceived as an active and constructive process. However, both the international PISA 2012 (OECD, 2014) findings and the Spanish Educational System Diagnosis (INEE, 2010, 2011), as well as popular opinion, all reflect certain deficiencies in academic performance in the area of mathematics. Some of the current problems in the teaching-learning of mathematics in general, and of geometry in particular,

may be the result of a lack of mathematical knowledge on the part of individuals studying to become teachers (Sánchez and López, 2011), as well as a result of their training in mathematics education (Rico, 2012), an aspect that should be taken into account in the teaching of geometry.

Nonetheless, solving these professional challenges is something that can be expected of the field of research in mathematics teaching (Rico, 2012; Sierra, 2011). For all of these reasons and as a result of other problems typical of geometry teaching, students have difficulty in understanding and learning the subject, and for the same

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reasons, teaching has focused on developing students' deductive abilities, omitting interaction (conjecturing, exploring).

Being aware of the problems involved in this sphere of teaching-learning, we believe that more educational research is needed to broach and solve the dysfunctions detected in the different reports assessing our educational system. We therefore posited investigating the most representative theories in this area of study, which then led to the need to design an instrument to measure performance in geometry of students in the first year of Compulsory Secondary Education in Spain (acronym in Spanish: ESO), which corresponds to 12 to 13 years old students. This is the year and stage of education that our research into geometry education focuses on. The findings of this work are important for their repercussions on student learning and improved teaching. Our concern as mathematics teachers is to incorporate to our teaching practice the contributions that have come from the field of educational research, specifically regarding geometry teaching, and to investigate and propose efficient teaching models.

As regards the specific research objectives, an educational research approach was taken, based on the need to solve problems of comprehension in geometry learning that come up daily in the classroom, and in this study the results of the design and validation of an instrument that allows us to probe into the mistakes that students make in the geometry block of contents in the curriculum were presented. To this effect, a test (Appendix) to measure the students' knowledge before and after completing the geometry subject matter in the first year of ESO was devised. With this instrument and in successive stages of research, our objective was to detect student errors in understanding at both moments of learning.

When devising the measuring instrument in question, we took as a reference the curricular framework for the first year of compulsory secondary education in Spain. We likewise took into account the related bibliography considered relevant by the scientific community, but above all, the students' errors in comprehension.

The curricular proposals for learning geometry that was analyzed are based mainly on the Van Hiele Model (1957, 1986), analyzed by Corberán et al. (1994), Jaime (1993), Gutiérrez et al. (1991, 1994), and Peeg et al. (1997), in addition to assessment tests designed to evaluate the contents in this area, such as those by Gutiérrez et al. (1991), Mayberry (1981, 1983), Usiskin (1982) and other contributions to geometry teaching such as those by Alsina et al. (1997), and Rico et al. (2002). Furthermore, other studies, such as those by Guillén (2000) and Huerta (1999), suggest focusing the study on the detection of errors as part of the research stage in the Van Hiele Model and adapting the theoretical frame to the reality of the classrooms in which the research is to

be carried out. Thus, in our case the instrument had 13 items with three responses to choose from and was applied to a sample of 177 students in two schools of secondary education (Table 1).

After a detailed analysis of the theories related to geometry learning in order to make a theoretical selection of the items for the final test, it can be said that these theories are linked to two focal points: the first focuses on the cognitive processes that deal with the comprehension of geometric concepts (Hoffer, 1983; Jaime, 1993; Van Hiele, 1957, 1986) and the second draws together all the theories emphasizing the formation of geometric concepts, such as the Theory of Figural Concepts (Fischbein, 1993), the Concept Image - Concept Definition model (Vinner and Hershkowitz, 1980) and the Visualization-based Interpretation of Geometric Concepts (Duval, 1995, 1998). These approaches are not independent, but rather complement each other. Although in no way underestimating the influence of the theories underlying any of these theoretical models, in this study our central focus revolves around the basic level defined by the Van Hiele, which has to do with the aspect of visualization (the image of the concept) in the forming of geometric concepts, and which we describe briefly in the next section. Other relevant studies about the forming of geometric concepts which will also serve as a reference point in the shaping of the thematic nucleus underlying our research were likewise approached.

THEORETICAL BACKGROUND

The theory known as the Van Hiele model emerged in Holland in 1957. Pierre and Dina Van Hiele defended their doctoral dissertations and carried out successive research studies until they developed a model which explains how students gradually construct geometric thinking in five consecutive levels, guided by the teacher through five stages of learning. Their contribution to the field of geometry learning has been discussed by different authors, the most outstanding being those by Fuys et al. (1988) and Pegg (1992).

The theoretical construction of the model has a dual nature: a descriptive aspect, in which the levels of geometric thinking that the student goes through are specified, and a prescriptive aspect, which establishes the learning stages the teacher must guide the students through so that they can acquire a determined level of knowledge.

The descriptive aspect is hierarchically ordered into five levels of thinking (Patkin, 2014), although according to Patkin and Barkai (2014), owing to doubts that have emerged from mathematics educators (including van Hiele himself), today the usual practice is to speak of the following four levels: (i) Recognition or visualization, (ii) analysis or description, (iii) informal deduction, and (iv)

Table 1. Percentages of distribution by sex in the sample (aged: 12 to 13).

School	No. of students	Females	%	Males	%	NA	%
IES Joaquin Araujo	81	41	50.61	40	49.39	0	0
IES Dolores Ibarruri	96	49	51.04	45	46.88	2	2.08
Total	177	90	50.85	85	48.02	2	1.13

formal deduction

In addition to the specific thinking that takes place at each level, Van Hiele identified five general properties that characterize the model: sequential, advancement, intrinsic and extrinsic, linguistics, and mismatch. These properties are significant to educators because they provide guidance for making instructional decisions (Crowley, 1987).

On the other hand, the prescriptive aspect consists of five learning stages: (i) Inquiry; (ii) Directed orientation; (iii) Explanation, (iv) Free orientation, and (v) Integration.

According to Clements (2003) progression from one level to the next can be facilitated through planned instruction. Therefore geometry instruction should be designed with these stages in mind (Choi-koh 1999).

Authors such as Koester (2003) and Patkin and Sarfaty (2012) have focused on investigating the different levels of knowledge acquisition in geometry and the difficulties involved. The existence of an important line of research in this field have also been noted, related to the work done by Vinner and Hershkowitz (1980) and Hershkowitz (1990, 1999), which is focused on knowledge of the cognitive processes that take place in students' minds when they are learning a new geometric concept. In this sense, the authors differentiate the image of the concept from its definition. The results of their studies led them to formulate a theory focused on the concept, which is called mental drawing, defined as the set of all the drawings that have been associated with the concept in the learner's mind. Thus, the image of the concept is composed of its mental drawing together with the properties that have been associated with that drawing in the mind of the learner. The definition of the concept is a verbal definition that accurately explains its comprehension.

These authors affirm that knowing the conceptual images that the students have in their minds is very important for teaching, since it gives teachers a better understanding of students' learning processes and helps them to suggest improvements for teaching to help avoid the formation of images of erroneous concepts.

In parallel, Fischbein (1993) developed the Theory of Figural Concepts to refer to mental entities that have both conceptual and figural characteristics. From the point of view of this model, images and concepts interact constantly during the reasoning process and sometimes produce conflictive situations until the geometric concept

is formed.

Duval (1993, 1995, 1998) developed his theory by focusing on the framework of acquisition of geometric concepts based on different systems of representation located in the field of semiotics, a field subject to important cognitive activity. For this author, the construction of a geometric concept is directly related to the construction of its graphic representation.

From our point of view, at the basic level of recognition or visualization (the stage at which the students in our sample find themselves) students have not yet formed the figural concept; they know only images without knowledge of the concepts and think that the figures possess irrelevant attributes such as their orientation on the plane; that is why they find themselves in a conflictive situation in which the concept loses strength in relation to the image.

For this reason, and as indicated earlier, in order to detect the level of formation of geometric concepts and errors in comprehension as part of the inquiry stage of the Van Hiele model and to adapt the theoretical framework to the reality of the classroom, our study focuses on the basic level of recognition or visualization in the Van Hiele model, analyzing the conceptual images that students show at this level. The objective is highly relevant, since we are not aware of any previous research that has broached the relation between the recognition and the visualization of the concept (Van Hiele level 0) on one hand, and the curricular design proposal for geometry in Spain, on the other. Thus, this study revolves around the drawing up and validating of a test for measuring the performance of students in their first year of compulsory secondary education in geometry. In the next section, we describe the process of validating the instrument.

MATERIALS AND METHODS

This research was carried out using a quantitative analytical empirical approach with a non-experimental design in order to validate the instrument in question.

Technical characteristics: Sample, process, reliability and validity

As shown in Table 1, the target population was comprised of male and female students in their first year of compulsory secondary

education (ESO) aged between 12 and 13. The schools were selected for their convenience. Following the current terminology, it can be said that the sample was incidental, because it was the one available for the study at the time it was being carried out (Pereda, 1987).

The first question posited was the number of sample units necessary and, as pointed out by Morales (2012) the question to be answered is "What is the study for? The literature is abundant in this sense and different authors maintain different criteria. The issue was related mainly to educational research. In our case, the fitting question is: How many students are needed to construct and analyze a measurement instrument and to subject the instrument to item and factor analysis, as well as interpret its reliability and validity?"

Nunnally (1978) and Afifi and Clark (1990) proposed that there should be at least between five and ten subjects per item. This may be the most widespread criterion for carrying out factor analysis when trying to establish construct validity (Argibay, 2006). Other authors, such as Guilford (1954) and Kline (1986, 1994), consider a small sample adequate as long as the number is not much below 200.

To determine the number of sample units we adopted the criterion established by the above-mentioned authors. Since the recommendation is to use between 150 and 200 subjects, we assume that our sample, comprised of 177 students, is sufficient and adequate, and thus acceptable. The sample characteristics are shown in Table 1.

The process was began with an updated review of the literature concerning the contents to be assessed. This analysis allowed us to identify a series of variables that appeared as constants in the assessment of the geometrical concepts to be measured. Taking as a reference the theoretical foundation described in the previous section, and in awareness of the complexity involved in the construction of an instrument to assess the acquisition of geometric concepts, we decided to use a multiple choice test as the measurement instrument because it would allow us to collect and quantify the information in a simple way. In the wording of the questions for the pilot test, we took into account the specifications of Blaxter et al. (2000) and followed the indications of Spector (1992) for the stages used to devise it.

Once the items were selected (32 questions with three responses to choose from [96 items]) a group of experts evaluated the suitability of each item for the attribute to be measured. This is the most common way to detect the quality of the contents, especially in the educational context (Prieto and Muñiz, 2000; Prieto and Delgado, 2010). This is why we turned to a group of experts in the contents of the instrument in order to evaluate its items, instructions, and design (Millman and Greene, 1989).

Once the contents of the items had been analyzed, some of the items (19 questions with three responses to choose from [57 items]) were eliminated and changed the content of others in line with the indications from the group of experts. A cognitive analysis of the items was also carried out in order to learn the strategies that the students would use to answer them.

Since these procedures alone are not sufficient (Visser et al., 2000), an attempt was made to strengthen the process using the analyses presented in the following sections.

Subsequently, with the sample selected, and before imparting the teaching programmed for the contents in geometry, a pilot test was carried out and the test was given to 177 students in order to analyze its internal consistency. This processes yielded a Cronbach's alpha coefficient = 0.938, which according to authors such as Web (1983) or Kline (2000) more than satisfies the reliability requirements for the instrument.

It can thus be concluded that the results obtained show very high reliability, which according to the Cronbach interpretation would be

within the coefficient value between 0.85 and 0.90, whose meaning is catalogued as almost perfect. Nonetheless, in order to be as rigorous as possible with the process we should also take into account the reflections made by Morales (1995) to the effect that when reliability is calculated in the human sciences, one should specify what kind of reliability it is. A low coefficient does not necessarily mean that the instrument is bad and should not be used. Reliability is not a characteristic of the instrument, but rather a characteristic of the results, of the scores obtained by a specific sample. And it is very important to underscore this fact even though it is commonly referred to as if it were a characteristic of the instrument; this frequent way of referring to it must be understood in order to understand what it means. One same instrument can measure and classify one sample very well but do so very badly with a high margin of error when applied to another sample. One same instrument can measure well if the subjects differ widely among themselves but have a low reliability if the sample is homogeneous. Reliability must thus be calculated for each sample, regardless of the reliability of the instrument. The data obtained from applying our test were analyzed using the statistical program SPSS 20.0

Subsequently, items were empirically selected based on having administered each one to the sample of subjects selected to this effect. Statistical analysis of the test was begun by analyzing the reliability of each item (Morales, 2003; Lukas, 1998; Muñiz and Yela, 2003). The term "difficulty index" is usually used to indicate the ratio of correct to incorrect answers to an item in the student sample in question, but to be consistent with the formula it was agreed to call it the "facility index." This analysis, together with the evaluation by experts, allowed us to shorten the test with a wide range of facility indices that gave the test a rating of average difficulty, desirable for measuring student learning. Subsequently, the psychometric characteristics of the test were measured in order to verify its reliability and validity to then draw up the definitive version, even though most of the items discriminated satisfactorily.

Before presenting the reliability study, it is worthwhile to recall that reliability expresses the accuracy of the measuring instrument and validity means that the instrument actually measures what we want it to measure.

The reliability of the results of the test, that is, its internal consistency as measured by Cronbach's alpha coefficient, was 0.938. Cronbach (1960) affirmed that only those tests with a reliability coefficient of at least 0.90 should be used for educational purposes (which is our case), whereas Nunnally (1978) proposed a minimum value of 0.70. After reviewing the works of several authors, Webb (1983) proposed an interpretation of the reliability coefficient that would fall within a coefficient value between 0.85 and 0.90. If we take that as a reference, it can be concluded that our results show very high reliability. Factor analysis was carried out, identifying the fit of the data, using the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's sphericity test.

Some authors, such as Lukas (1998) and Muñiz (2003), report that attempts are being made to extract certain inferences from the test data. Validity refers to the fits, significance and usefulness of these inferences. It is traditionally defined as the degree to which a test measures what it is supposed to measure. This definition, however, needs to be qualified and requires specification with the validity of the contents, of the criterion and of the construct, as stated previously.

The content validity of the test seems to be guaranteed by the study carried out by the group of experts, the result of which was the elimination of certain items.

Finally, construct validity, the most important level of validation (Cronbach and Meehl, 1955), aimed at determining the degree to which the test measures the theoretical trait in question, is a complex process that usually includes several procedures. As

Table 2. Explanatory percentage of variance in the factor analysis.

Factor	Eigen values	%Variance	%Accumulative
Factor 1	12.846	26.762	26.762
Factor 2	3.201	6.668	33.430
Factor 3	2.679	5.582	39.012
Factor 4	2.473	5.151	44.163
Factor 5	2.390	4.978	49.141
Factor 6	1.916	3.992	53.133
Factor 7	1.810	3.772	56.905
Factor 8	1.649	3.435	60.340
Factor 9	1.462	3.047	63.387
Factor 10	1.307	2.723	66.110
Factor 11	1.289	2.685	68.794
Factor 12	1.166	2.429	71.223
Factor 13	1.101	2.293	73.516

Messick (1980) states: "...construct validity is indeed the unifying concept of validity that integrates criterion and content considerations into a common framework for testing rational hypotheses" (p.1015).

In regard to the technical demands of a study of these characteristics, we can affirm that all of them have been fulfilled; there is usually consensus about the importance of construct validity (Cronbach, 1988; Chacón and Moreno, 2000; Loevinger, 1957; Messick, 1995; Moss, 1992; Pérez-Gil; Tenopyr, 1977); in addition, factor analysis is usually run to analyze the structure being measured (Cronbach, 1980, 1982, 1988; Guion, 1977; Tenopyr, 1977; Thurstone, 1931, 1947). Besides observing the high correlation between the items, the two tests mentioned earlier were carried out to analyze the appropriateness of applying factor analysis (García et al., 2000; Pérez, 2009). In line with technical data obtained, Table 2 and 3 show the descriptive statistics.

This structure, which maintains an unequivocal relation to the curriculum of the first year of upper secondary education in Spain, is what allows us to confirm the validity construct that can be seen in the Table 3.

The analyses performed yielded very satisfactory results. The definitive version of the test (Appendix) consists of 13 items with three responses to choose from.

RESULTS

This paper describes the process of devising an instrument (test) for measuring performance in geometry of students in their first year of compulsory secondary education (ESO) in Spain. After analyzing the theoretical framework and other preliminary assessment tests in this field, the test was given to a sample of 177 students in order to validate it. The empirical treatment and validation process consisted of two stages: the first, aimed at obtaining the number of factors and percentage of explained variance, yielded a test comprised of 13 factors, and the second, confirmatory analysis, determined that the test was comprised of 13 factors and 13 items.

The items on the test are related to the theory of acquisition of geometrical concepts and to the contents included in the prescriptive curricular design in Spain. It can be affirmed that the test is related to the attribute that it is intended to measure and fits the target population. Likewise, the data obtained from the (exploratory and confirmatory) factor analyses showed adequate values, allowing us to establish a definitive version consisting of 13 items grouped into 13 factors with eigenvalues higher than one that explain 73.516% of the variance.

The instrument was carried out in a pilot study. A quasi-experimental study with one non-randomized study group (n=137) was also conducted using a pre-and post-test design with the purpose of searching for differences before and after the Van Hiele learning process and detecting persistent errors (Cabello et al., 2014). The instrument allowed us to observe the initial concepts that the students had in relation to the contents of geometry and their most common errors. There were significant differences between the average performance of each of the two groups of the study in favor of the experimental group taught with the Van Hiele Model ($F= 0.317$, $p =0.006$). Eight persistent errors were also detected after implementing the learning process, only two of which were detected in control group. Therefore, the results confirm that the instrument is valid to detect the initial errors of students in relation to the geometrical concepts that they have acquired. We think it is important to have real data on the initial situation of the students before implementing the Van Hiele Model for effective teaching. The relevance of persistent error detection is that it allows us to determine the efficacy of the teaching methodology and that it indicates the errors that students make. The positive effects of employing the Van Hiele model in geometric concepts acquisition are clear (Al-ebous, 2016), but a tool is needed to detect geometric

Table 3. Factor composition.

Factor	Items	Weighting Factors	M	DS
1 Classification of triangles according to their sides and angles	7b2	0.875	0.63	0.803
	7c2	0.859	0.71	0.868
	7a2	0.858	0.62	0.790
	7b1	0.722	0.82	0.897
	7a1	0.713	0.72	0.866
2 Recognition of polygons (difficult)	11h	0.669	0.43	0.672
	13e1	0.669	0.42	0.728
	11j	0.658	0.55	0.746
	11g	0.653	0.69	0.839
	11c	.538	0.63	0.844
3 Identification of the relative position of two angles	5b	0.854	1.40	0.733
	5a	0.835	1.41	0.734
	5c	0.809	1.38	0.737
4 Determining the angles of similar triangles and obtaining an angle from knowledge of the other two angles	6b	0.939	0.88	0.874
	6a	0.919	0.90	0.853
	6c	0.831	0.76	0.776
5 Identifying types of angles	4b	0.814	1.90	0.314
	4c	0.790	1.88	0.348
	4a	0.756	1.93	0.282
6 Recognition of the elements of a circle	16c	0.699	0.97	0.907
	16b	0.676	0.75	0.836
	16e	0.664	0.51	0.770
7 Identification of (difficult) planes related to the circle	17e	0.847	1.25	0.433
	17c	0.808	1.30	0.459
	17b	0.705	1.33	0.473
8 Determining the area of a polygon	13b3	0.851	0.79	0.927
	13c3	0.851	0.76	0.923
	13e3	0.444	0.22	0.556
	18c	0.445	0.67	0.822
9 Recognition of the elements of a regular polygon	12b	0.634	0.42	0.696
	12a	0.628	0.98	0.935
	12c	0.619	0.44	0.689
10 Recognition of (easy) polygons	c1	0.894	1.26	0.965
	b1	0.884	1.29	0.956
11 Identification of the relative position of two lines on a plane	2a	0.848	1.56	0.737
	2c	0.723	1.35	0.700
	2b	0.491	1.92	0.351
12 Identification of the perpendicular bisector and the bisector	8	0.802	1.20	0.936
	9	0.785	1.24	0.923
13 Identification of the (easy) planes relating to the circle	17a	0.763	1.77	0.423

mistakes before implementing the Van Hiele Model.

Conclusion

It can be concluded that the instrument presented here has construct validity and there is evidence of its predictive potential in relation to the grades obtained by the students in the subject.

This instrument therefore will allow us to explore students' errors in geometry comprehension and seek the best way to correct them through application of the Van Hiele Model. This test was considered to be a contribution to the field of teaching/learning geometric concepts, one that can be very useful in the detection of mistakes made by students in this area.

Conflict of interests

The authors have not declared any conflict of interests.

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Full Length Research Paper

Assessment of language learners' strategies: Do they prefer learning or acquisition strategies?

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The aim of this study is to evaluate learning and acquisition strategies used by second/foreign language learners. This study is a comparative investigation of learning and acquisition strategies of successful and less successful language learners. The main question of the study is to investigate if there is a relationship between the learners' strategies and their success; why some learners become less successful in language learning while others become more successful. Although there are many different answers to this question, in the study "the strategy" that the learners used has been scrutinized. The study, assessed the language learning strategies used by 92 university students in Turkey, using Oxford's (1990) Strategy Inventory for Language Learning (SILL). Also, one hundred and twenty university students in Turkey participated in an interview. They were grouped in into two parts as "successful" and "less successful" learners. The learners' levels were based on their scores in a standardized test administered at the beginning of their schools. In the questionnaire, T-Tests in statistical package for social sciences (SPSS) were used. In the interview, Fisher's Exact Test for 2x2 Tables and Chi-squared Test of Association Tests in SPSS were used. Both of the results reveal that there is a big gap between the students who use learning strategies and the ones who use acquisition strategies. The findings show that the language learners have different language learning strategies and these strategies can be grouped in two main title as learning and acquisition strategies. These findings have important implications for teachers, instructors and program designers to develop and practice different language strategies in order to have more successful students. At the end of the study, some suggestions were submitted to foreign language teachers and learners.

Key words: Strategy, acquisition, learning, language learners, language teaching, language learning.

INTRODUCTION

Foreign language learning is, in fact, a kind of life-long learning. If a person is exposed to a foreign language in

all parts of his/her life, he/she certainly becomes successful. This is based on the natural way of learning.

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Although in a second language acquisition situation, the language is spoken in the environment of the learner and the learners have a lot of opportunities to use the language in natural way, in a foreign language learning situation the language is not spoken in the immediate environment, and the learners have very few opportunities to use the language in natural communication situations. Therefore, in foreign language situation, many issues are involved such as the methods, the techniques, the styles and the strategies.

Language acquisition or language learning

In language learning, of course there is no magic formula for success. However, there are some clues and tips. First of all, a person should understand the differences between language learning and language acquisition.

Acquisition is the process by which humans perceive and comprehend language, produce and use words and sentences to communicate. Language *acquisition* is very similar to the process children use in acquiring first and second languages. It requires meaningful interaction in the target language. The speakers are concerned not with the form of their utterances but with the messages they are conveying and understanding. Error correction and explicit teaching of rules are not relevant to language acquisition (Brown and Hanlon, 1970; Brown, Cazden and Bellugi, 1973). Conscious language *learning*, on the other hand, is thought to help a great deal by error correction and the presentation of explicit rules (Krashen and Seliger, 1975). If the learners firstly are aware of this difference, they can solve the problem much more easily.

Most of the language learners are not aware of the distinction between acquisition and learning. Language acquisition is a subconscious process; language acquirers are not usually aware of the fact that they are acquiring language, but are only aware of the fact that they are using the language for communication. Learning refers to conscious knowledge of a second language, knowing the rules, being aware of them, and being able to talk about them. learning is "knowing about" a language, known to most people as "grammar", or "rules" (Krashen, 1982).

For most students the difference between acquisition and learning is blurred. Therefore they mix the strategies of learning and acquisition with each other. In fact, this is very important to be successful in language learning. According to Natural Approach, the things are acquired subconsciously, whereas, learning is a conscious process. Language learning is 'knowing the rules', having a conscious knowledge about acquiring grammar. In conscious learning, the speaker is concerned about correctness. On the otherhand, "acquisition of a language" is 'picking it up', developing ability in a language by using natural, communicative situations. The first principle of the Natural Approach is that comprehension precedes

production. The second principle is that production is allowed to emerge in stages. The Third one is that the course syllabus consists of communicative goals. This means that the focus of each classroom activity is organized by topic, not grammatical structure. The final principle is that the activities done in the classroom aimed at acquisition must foster a lowering of the affective filter of the students.

Natural Approach has five theoretical hypotheses. The Acquisition-Learning Hypothesis claims that learners have two distinct ways of developing competence in second languages (via acquisition or via learning). The Natural Order Hypothesis states that grammatical structures are acquired in a predictable order. The Monitor Hypothesis has an extremely limited function in second language performance: it can only be used as a monitor or editor. However, in acquisition, monitor system is very limited. In monitor-free situations, learners are focused on communication and not on form. The Input Hypothesis claims that we acquire language by understanding input that is a little beyond current level of competence. This hypothesis claims that listening comprehension and reading are of primary importance in the language program, and that the ability to speak or write fluently in a second language will come on its own with time. The Affective Filter Hypothesis is related to second language achievement. All of these hypotheses are related with subconscious language acquisition (Krashen and Terrell, 1995). "If the languages are learned subconsciously, students learn faster and better. In conscious learning brain analyzes grammar, memorizes vocabulary, and translates messages. The result ends with complete knowledge of grammar rules and translation abilities. However, the person can't speak well and can't understand easily. Subconscious acquisition strategies are more effective. These provide comprehensible input to the brain.

By this way, the person can acquire language and improve their four skills, grammar and vocabulary. At the same time, by acquisition, not only the learners improve their language naturally, effortlessly and tremendously but also it is a stress free process.

Strategies and styles

Throughout the language teaching history, teaching methods, textbooks, grammatical paradigms were cited as the primary factors in successful learning. In recent years, language teaching focused on the role of the learner in the process. This is based on the "styles" and "strategies" of the learners.

Style is a term that refers to consistent and rather enduring tendencies or preferences within an individual. They are general characteristics of intellectual functioning. It differentiates the person from others. Therefore, styles

vary across individuals (Brown, 2007).

Learning style research is used with personality and cognitive styles to determine ability, predict performance, and improve classroom teaching and learning (Reiff, 1992; Ehrman, 2001; Ehrman and Oxford, 1995).

Firstly, the teacher must be aware that there are a wide variety of styles and strategies in the learning process.

Secondly, the teacher needs to care about each individual separately in the class (Brown, 2001). Besides, not only the teachers but also the learners should know themselves. As an individual, a person should be aware of his/her styles and according to these styles he/she should choose the best strategies. Generally the strategies are subconsciously applied, the learners are not consciously aware of them (Brown: 2001: 207). In recent years there are some studies related to this subject. Bozavli (2016), in his study "Language learning profile of generation Y learner" explains that very few studies have been reported on the language learning profile of Generation Y. Therefore, in his study he tries to fulfill the gap in and contribute to the research on language learning profiles of Generation Y born between 1980 and 1999. The participants of the study consist of students in the department of foreign languages in a university. The results suggest that while Generation Y shows positive distinction in know-how and ability to learn, they have difficulties in learning and skills at verbal expression and comprehension.

Strategies are specific methods of approaching a problem or task, modes of operation for achieving a particular end, planned designs for controlling and manipulating certain information. Second language learning strategies are "specific actions, behaviors, steps, or techniques used by students to enhance their own learning." They vary within an individual. Rubin (1987) states that language learning strategies are behaviours, steps, or techniques that language learners apply to facilitate language learning. They "make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations" (Oxford et al, 2003). They are intentional behaviours and thoughts. These include analyzing and organizing information during learning to increase comprehension. Learning strategies vary from simple tasks to more complex tasks based on the learners' styles (Brown, 2001; Ellis, 2012).

O'Malley and Chamot (1985) view them as skills that are acquired as declarative knowledge. According to them, by the help of extensive practice, new knowledge is gained and stored. However, Oxford explains the 'mental action' aspect of strategies (Macaro, 2004). Oxford's taxonomy of language learning strategies is the most comprehensive classification which divides them into two major categories: direct and indirect (The Strategy Inventory for Language Learning-SILL). While direct strategies consist of memory, cognitive, and compensation, indirect strategies consist of metacognitive, affective, and

social strategies (Ellis, 2012).

The language strategies are related with the learning and communication strategies, as well. Learning strategies are related to input processing, storage, and retrieval. Communication strategies pertain to output. It is the production process. It aims to deliver messages to others. Learning strategies are influenced directly by learners' explicit beliefs about how best to learn, and are divided into three main categories. These are meta-cognitive, cognitive and socioaffective strategies. Metacognitive is a term used in information-processing theory that involve planning for learning, thinking about the learning process, monitoring of one's production or comprehension, and evaluating learning after an activity is completed. Metacognitive strategies are advance organizing, directing attention, selective attention, self management, functional planning, self-monitoring, delayed production, self evaluation (Brown, 2007).

Metacognitive strategies deal with the planning, monitoring, and evaluation of language learning activities (Richards, Renandy, 2002). Cognitive strategies are more limited to specific learning tasks and involve more direct manipulation of the learning material itself. Cognitive strategies are repetition, resourcing, translation, grouping, note taking, deduction, recombination, imagery, auditory representation, keyword, contextualization, elaboration, transfer and inferencing (Brown, 2007: 135). Also, cognitive strategies involve the identification, retention, and retrieval of language elements (Richards, Renandy, 2002: 120). Socioaffective strategies have to do with social-mediating activity and interacting with others. Socioaffective strategies are cooperation and question for clarification (O'Malley et al., 1985). Effective strategies are those that serve to regulate emotions, attitudes, and motivation.. Social strategies refer to actions learners take to interact with users of the language (Richards and Renandy, 2002).

Communication strategies are avoidance strategies and compensatory strategies (Brown, 2001). While learning strategies deal with the receptive domain of intake, memory storage, and recall, communication strategies pertain to the employment of verbal or nonverbal mechanisms for the productive communication of information (Brown, 2007). Communication strategies consist of attempts to deal with problems of communication while interaction.

A number of options are available for helping learners to identify their own styles, preferences, strengths, and weaknesses. The most common method is a self-check questionnaire in which the learner responds to various questions, usually along a scale of points of agreement and disagreement (Oxford's 1995 Style Analysis Survey). Not all learners are alike. Through checklist, and other methods teachers can become aware of students' tendencies and then offer advice on learning strategies (Brown, 2007). Style and strategy awareness are not

limited to the classroom. Many successful learners have reached their goals by means of their own self motivated efforts (Brown: 2007: 147). Rubin (1975) started the researches on the strategies of successful learners and explained that after identification such strategies could be made available to less successful learners.

Despite the strategy-based research on various aspects of language learning, virtually no research currently exists which investigates the use of the types of learning strategies by learners when they acquire two foreign languages concurrently in two different learning environments, being formal and the other non-formal. The researches have generally focused on variables affecting language learning strategy in formal settings or the effects of strategy training on target language acquisition (Alptekin, 2007).

In literature, there are a lot of studies on strategies and styles of learners. However, in recent years especially strategies and styles in language learning have been very important place in studies. Wong and Nunan (2011), presents the results of a comparative investigation into the learning styles and strategies of effective and ineffective language learners. Subjects for the study were one hundred and ten undergraduate university students in Hong Kong. The study revealed key differences in learning strategy preferences, learning styles and patterns of language use. Implications of the study are presented and discussed. In another study, Biçer (2014), in his study, aims to investigate the learning styles of students and instructors at foreign language preparatory school of a state university. It also aims to find out whether there is statistically significant difference between the academic achievement levels of students with different learning styles and achievement levels of students who have the same learning styles as their instructors and those who do not. It was found out that the most common learning style among the participants was diverging. Uhrig (2015), in his study represents an attempt to resolve the influence of language learning strategy choices through two case studies of international students' learning strategy use on tasks in professional graduate programs in the US. Data gathered from interviews, documents, and task logs were analyzed first for strategy use on specific tasks, then for patterns that may indicate consistency according to learning style. The findings indicate that the participants' learning styles provide more predictability in strategy use on particular tasks than other factors such as discipline.

The present study focuses on understanding what types of strategies language learners frequently use in learning and acquisition of foreign languages. In the study, two groups of learners, one exemplifying less successful students and the other more successful learners in English as their foreign language are searched. It is designed to explore different strategies they use and how these strategies effect their success.

METHODOLOGY

Research design

The aim of this study is to expose different language strategies of language learners, and to decide which strategies (learning or acquisition) are much more affective in foreign language proficiency. In addition to this, in the study it is searched that if there is a relationship between the learners' strategies and their success; why some learners become less successful in language learning while others become more successful. In this research, the following questions are sought to be answered:

1. Is there any relationship between the strategies of foreign language learners and their success?
2. Which strategies are more affective in foreign language proficiency?
3. Is it possible to group of these strategies as acquisition and learning strategies according to the success of the learners?

In this research, literature review, document analysis and experimental data were used to search strategies both quantitatively and qualitatively.

Research settings and participants

The study represents a subsample of a longitudinal project focusing on language learning/acquisition strategies of university students in Ankara, Turkey. Two groups of Turkish EFL learners participated in this study, totaling 212 students. The first group (52 more successful students, 42 less successful students) consisted of 92 university students in Ankara. For his group, the language learning strategies were assessed by using Oxford's (1990) Strategy Inventory for Language Learning (SILL). The second group, on the other hand, were 120 university students in Ankara were interviewed. All of these students, who were at intermediate and upper-intermediate levels of English as a second language (ESL), range in age from 18 to 21.

Instrumentation

In the study, for the first group Oxford's (1990) Strategy Inventory for Language Learning (SILL) was used. It consists of 50 items as six categories of strategies (Oxford's SILL appears in the Appendix). These six categories are memory strategies, cognitive strategies, compensatory strategies, metacognitive strategies, affective strategies, and social strategies. As the memory strategies help learners to remember new information, cognitive strategies help learners to understand and to practice. With the compensatory strategies, the learners can use the language through practical ways. Metacognitive strategies enable learners to organize and evaluate themselves. Affective strategies help learners to motivate themselves. Social strategies encourage learners to interact in the society.

The second step of this research is to interview the English Language Teaching (ELT) students on what strategies they use. To investigate the differences and the similarities of the strategies in language learning and acquisition, two different groups of students were interviewed. The interview questions were made by the author of the research. The interview questions were included in the Appendix) In an attempt to elicit a set of language learning strategies typically used by university students learning English in Turkey, 120 students participated in the study. One group (60

Table 1. Cronbach's alpha values.

Variable	Cronbach's alpha	No of items
Memory	0.745	9
Cognitive	0.809	14
Compensatory	0.621	6
Meta cognitive	0.894	9
Affective	0.670	6
Social	0.728	6
Toplam	0.937	50

Table 2. Group statistics.

Variable	Student types	N	Mean	Std. Deviation	Std. error mean
Memory	Successful	52	3.1090	0.66247	0.09187
	Less successful	42	2.6243	0.62177	0.09594
Cognitive	Successful	52	3.3832	0.59291	0.08222
	Less successful	42	2.8588	0.64344	0.09928
Compensatory	Successful	52	3.5192	0.66311	0.09196
	Less successful	42	3.1587	0.60816	0.09384
Meta Cognitive	Successful	52	3.5321	0.74595	0.10344
	Less successful	42	2.9127	0.88363	0.13635
Affective	Successful	52	2.7019	0.82005	0.11372
	Less successful	42	2.3611	0.47700	0.07360
Social	Successful	52	3.4167	0.76874	0.10660
	Less successful	42	2.9683	0.74829	0.11546

students) consists of the students who were very successful in English lessons; the other group (60 students) consists of the students who were less successful in English lessons. The levels of the learners were based on their scores in a standardized test administered at the beginning of their first year. The interview was held with total 120 students who were randomly selected. All data collection was realized in L1. Although findings can not be generalised to the whole population, it may provide a general idea.

Data collection and analysis

English version of Oxford's SILL (1990) was given to 52 successful students; and Turkish version of it was given to 42 less successful students in ELT to understand which strategies were used in these two groups. The learners' levels were based on their scores in a standardized test administered at the beginning of their schools. 50 items in this questionnaire defines what learners do during L2 or foreign language learning. This questionnaire has a 5-point Likert scale, with 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. The answers of the students were analyzed by using T-test in SPSS and the results of two groups were compared. Participants completed the SILL in 20 min. In order to get reliability coefficient, by using statistical package for social sciences (SPSS) program, Cronbach's Alpha for internal consistency were found. This is shown in Table 1.

RESULTS

As it is seen in Table 1, the scales are reliable; Cronbach's Alpha for the whole SILL is 0.937. The comparison of the successful and less successful student was done by independent sample t-test. The means of successful and less successful students and Standard deviations are shown in Table 2, and the results of the T-tests are shown in Table 3.

According to the results of the analysis of T-test, the means of successful students in all categories are

Table 3. T-test results.

Levene's test for equality of variances			t-test for equality of means			
Variable	F	Sig.	t	Df	Sig. (2-tailed)	Mean difference
Memory	0.306	0.582	3.624	92	0.000	0.48464
Cognitive	0.510	0.477	4.104	92	0.000	0.52440
Compensatory	0.190	0.664	2.719	92	0.008	0.36050
Meta Cognitive	1.622	0.206	3.685	92	0.000	0.61935
Affective	9.331	0.003	2.386	92	0.019	0.34081
Social	0.025	0.874	2.845	92	0.005	0.44841

meaningfully higher than the means of less successful students.

In the interview, the students were asked "how they studied English". As for qualitative data collection, the interview for students included questions dealing with their styles and strategies. The data were obtained by noting the answers of the students. According to the answers of the students some basic language learning strategies were listed. For each strategy items, total numbers of the students were defined. In this process, except interview questions, some detailed information also was gathered. These were also written as strategy items in the list. Later, as a second step, the strategy items were grouped in to parts as acquisition strategies and learning strategies. In this process, the total numbers of the students were compared in this two groups. In addition to this, four skills were also analysed. In the interview, the detailed strategies were also analyzed in order to understand the techniques of the students during their language learning/acquisition process. The interview lasted almost 3 to 5 min for each person. According to the findings, a comparison was made between these two groups.

Because of the limited number of participants, a parametric data analysis could not be performed. Instead nonparametric data analysis was applied. The findings varied in two groups. Fisher's Exact Test for 2x2 Tables and Chi-squared Test of Association were used. According to the findings, a comparison was made between these two groups. This indicates that the reason of failure in language learning is based on the learners and the strategies they used. The results of interviews are summarized in Table 4 (in the tables, the successful students are shown as "A"; and less successful students are shown as "B").

When Table 4 is scrutinized, it can be seen that learners rate their ability in "reading" skills as rather high

in both groups. However, if we compare the data of two groups, it can be seen that the rate of "watching" is rather high among the successful students. 44 out of 60 students in group A learn English by "watching TV, films, series and news". 17 out of 60 students in the same group also prefer "reading authentic materials". Except for these, there are not very high rates in this group. If we look at the data of the other group (group B) we can see that, the second highest number in the items is "learning vocabulary". 34 out of 60 students study English by learning vocabulary.

The rate of the students in group A for this item is 11. The rate of the students who watch TV, films, series in group B is 23. As mentioned above, this number for group A is very high. Another high rate in group B is for "memorization". The number of the students who memorize in group B is 15. However, for the other group there is only 1 student that prefers memorization. 13 students prefer "learning grammar" in group A, but only 3 students prefer learning grammar in group A. The number of the students who do listening are almost the same. (11 in group A, 12 in group B). The students who like games in learning English is 11 in group B, however in group A this number is only 4. The numbers of the students who prefer "conversation and practices" are not very different in both groups. In group A it is 8, in group B it is 10. Also the number of the students who listen to music, songs, and lyrics do not differ very much. (group A:10, group B: 8).

Except for these data, there are some strategies which are preferred by only group B students. These are "reading books more than twice", "doing exercises", "reading audio books", "using vocabulary cards", "reading aloud", and "testing". As the study involves two different group of learners it can be defined with Fisher's Exact Test for 2x2 Tables. In the study the hypotheses are stated below:

$$H_0: \pi_1 = \pi_2$$

H_1 : The percentage of the students who are successful in English preferred acquisition strategies is higher than the students who used learning strategies.

$$H_1: \pi_1 > \pi_2$$

Table 4. The results of interviews.

Strategies	Group A	Group B
	successful students (60)	unsuccessful students (60)
*Reading book	42	46
Learning vocabulary by using different techniques	11	34
*Reading book twice or more	-	6
Learning grammar	3	13
Memorization	1	15
Sentence production	1	7
*Listening	11	12
*Watching films and reading their books	3	2
*Playing games (especially on computers)	4	11
Repetition	2	3
Pronunciation	-	2
Conversation and practice	8	10
*Listening to music, songs, lyrics	10	8
*Watching film, series, news	44	23
Doing exercises	-	9
Only learning in lesson	-	1
*Reading audio books	-	5
Individual study	-	1
Vocabulary cards	-	4
Translation	3	4
Reading Loudly	-	6
Trying to learn by testing (especially grammar)	-	1
*Using authentic materials	17	4
Writing exercises	3	2

*These are the acquisition strategies used by students. The other ones are the learning strategies used by students.

As it is seen in Table 5, more acquisition strategies are used by the successful students than the learning strategies. Table 6 shows case processing summary. In Table 7, Crosstabulation of language learning is given. As it is seen in Table 7, high, low and total crosstabulation scores differ. Table 8 show expected count cross-tabulation. In order to analyse these, Data->Weight Cases method in SPSS is applied.

The results of Chi-Square tests are shown in Table 9. The results show that as Sig. < 0.01, we can say the percentage of the students who are successful in English preferred acquisition strategies is higher than the students who used learning strategies. According to the interviews, the strategies of the students used can be grouped in two parts as acquisition strategies and learning strategies. These are shown in Table 10. The percentages of preference of four skills are given in Table 11.

When Table 11 is scrutinized, it can be seen that learners prefer "reading" as rather high in both groups. However, if we compare the data of two groups, it can be seen that the rate of "Listening and watching visual materials" is the highest for successful students. However,

"listening audial materials is not preferred by successful students. If we look at the data, we can see that, successful students do not speak very often in language learning processes. The data shows that "writing" has the lowest percentage for both groups. The percentages of two groups in Table 11 are demonstrated in Figure 1.

In Table 12, the percentages of the main studying areas are shown. According to results of the interviews, it is understood that the students learn or acquire English in four main different areas- vocabulary, grammar, pronunciation and translation. If we look at the data of the groups, we can see that less successful students spend their time learning new words. In addition to this, these students try to learn grammar. If the percentages of both groups are compared, it can be seen that there is a big gap. Besides this, both groups do not prefer studying pronunciation and translation. The percentages of two groups in Table 12 are demonstrated in Figure 2. In the interview, studying techniques of the students were also asked. Through the answers of the students, the techniques were grouped in 16 headings. The headings and the techniques are given in Table 13. Table 13 shows

Table 5. Acquisition and Learning strategies used by students.

Count/ expectation count	Group A (successful students)	Group B (less successful students)	
Acquisition strategies	131/103	117/145	248
Learning strategies	32/60	112/84	144
-	163	229	392

Table 6. Case processing summary.

Cases	Valid N Percentage (%)	Missing N Percentage (%)	Total N Percentage (%)
Metod learning starategies	392-100.0	0-0.0%	392-100.0%

Table 7. Crosstabulation of language learning.

Variable	High	Low	Total
Metod acquisition	131	117	248
learning total	32	112	144
	163	229	392

Table 8. Expected count crosstabulation.

Variable	High	Low	High success
Method acquisition count	131	117	248
Expected Count	103,1	144,9	248
Learning Count	32	112	144
Expected Count	59,9	84,1	144
Total Count	163	229	392
Expected Count	163,0	229,0	392

Table 9. Chi-square tests.

Variable	Value	df	Asymp.Sig. (2-sided)	ExactSig. (2-sided)	ExactSig. (1-sided)
	35.118 (b); 33.870	1	0.000		
Continuity correction (a); Likelihood ratio fisher's exact test linear-by-linear association; N of valid cases	36.696	1	0.000	0.000	0.000
	35.028	1	0.000		
	392	1	0.000		

(a) Computed only for a 2x2 table; (b) 0 cells (0.0%) have expected count less than 5. The minimum expected count is 59.88.

that more different learning strategies were used by the students who were less successful in language. These students preferred mostly memorization. They play games more than group A. In addition to this, they do exercises,

read loudly, use vocabulary cards, try to produce full sentences in language learning. In contrast to these, students in group A mostly prefer reading authentic materials and listening to music and songs to learn

Table 10. Acquisition and Learning strategies used by students.

Strategies	Acquisition strategies	Learning strategies
1	Reading book	Learning vocabulary by using different techniques
2	Reading book twice and more	Learning grammar
3	Listening	Memorization
4	Watching film and reading their books	Sentence production
5	Playing games (especially on computers)	Repetition
6	Listening to music, songs, lyrics	Pronunciation
7	Watching film, series, news etc.	Conversation and practice
8	Reading audio books	Doing exercises
9	Using authentic materials	Only learning in lesson
10	-	Class study
11	-	Using vocabulary cards
12	-	Translation
13	-	Reading loudly
14	-	Trying to learn by testing (especially grammar tests)
15	-	Writing exercises

Table 11. Four skills.

Strategies (Four skills)	Group A succesful students (%)	Group B less succesful students (%)
Reading	70	76
Listening (Audio)	18.3	20
Listening and Watching (Visua Materials)	73.3	38.3
Speaking	13.3	16.6
Writing	5	3.3

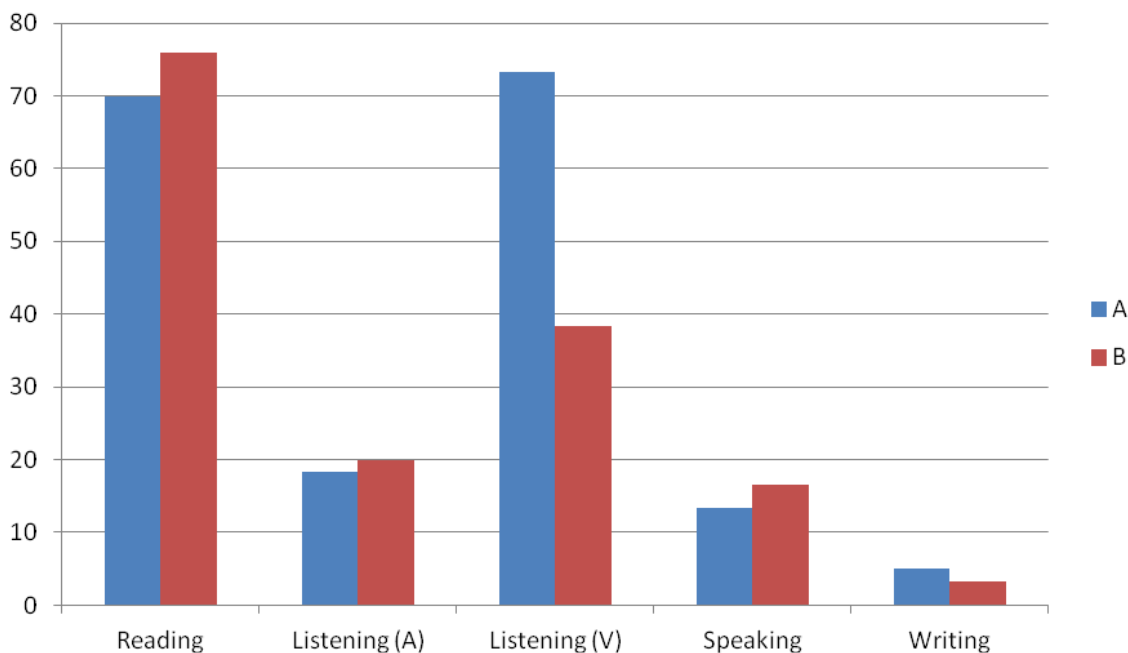


Figure 1. Comparison of Four Skills' Scores.

Table 12. Main studying areas.

Strategies	Group A succesful students (%)	Group B less succesful students (%)
Vocabulary	18.33	56.6
Grammar	5	21.6
Pronunciation	-	3.3
Translation	5	6.6

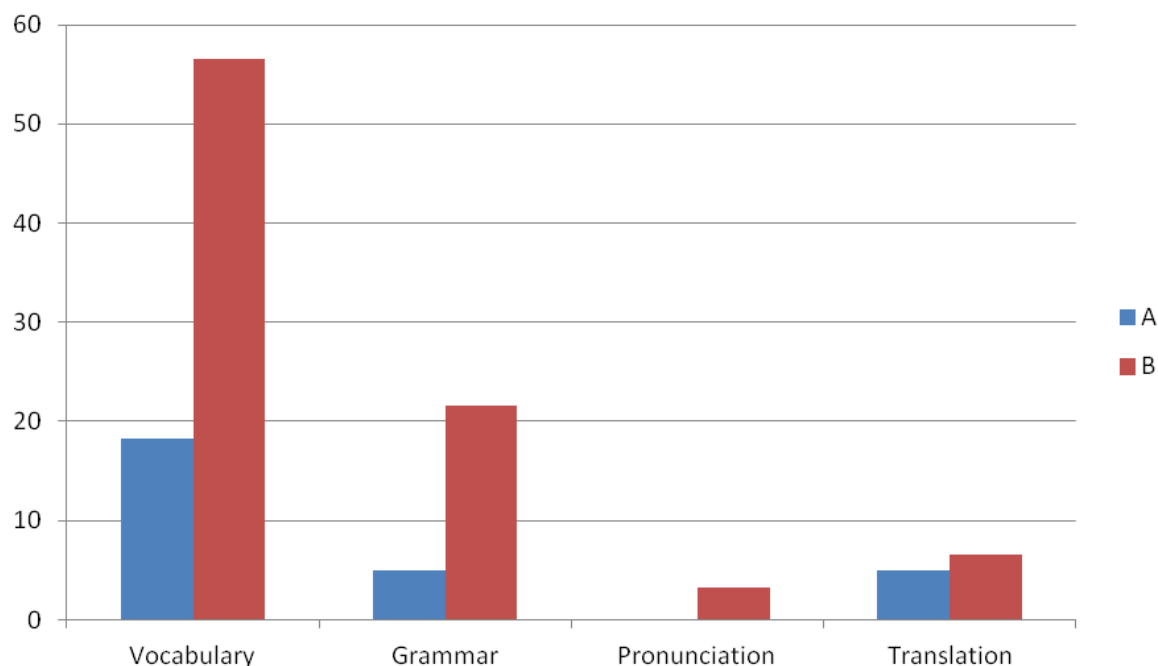


Figure 2. Comparison of main studying areas.

Table 13. Studying techniques.

Strategies	Group A succesful students%	Group B less succesful students (%)
Reading book (more than twice)	-	10
Memorization	1.6	25
Sentence production	1.6	11.6
Film books	5	3.3
Repetition	3.3	5
Exercises	-	15
Only learning in lesson	-	1.6
Reading audio books	-	8.3
Individual study	-	1.6
Vocabulary cards	-	6.6
Reading Loudly	-	10
Testing	-	1.6
Authentic materials (magazines)	28.3	6.6
Game	6.6	18.3
Music, songs, lyrics	16.6	13.3
Exercises	-	15

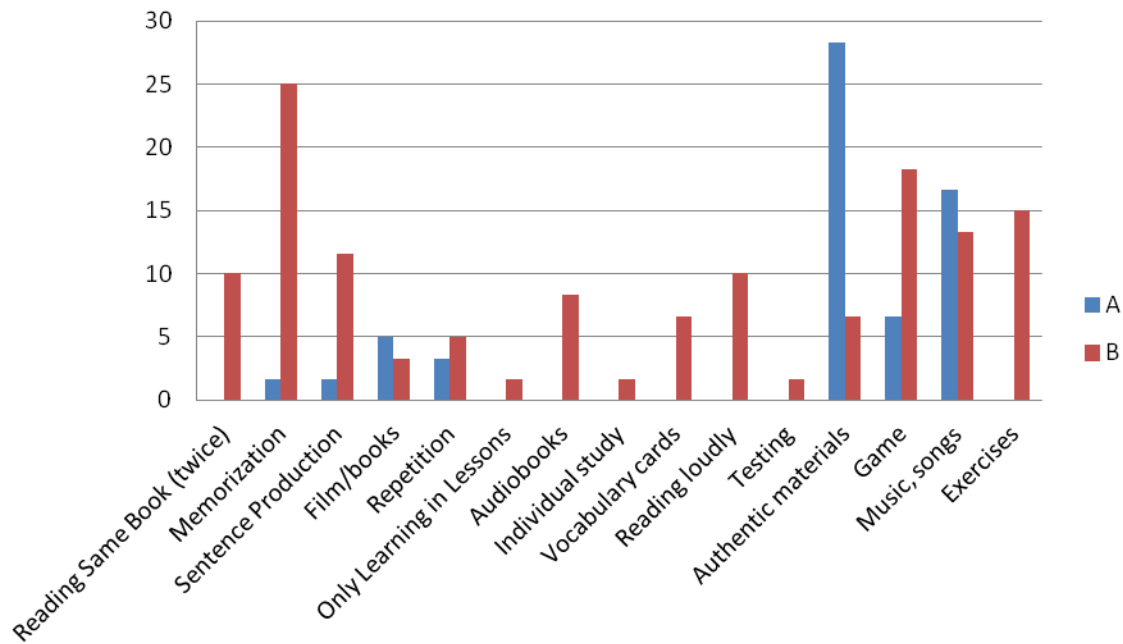


Figure 3. Comparison of studying techniques.

English. The percentages of two groups in Table 13 are demonstrated in Figure 3.

The results reveal that learners who are not very successful in English are exposed to learning environment. These students learn vocabulary and grammar consciously. They try to produce some sentences. Also, they use vocabulary cards. To remember what they learn, they prefer to memorize. They do practices, exercises, pronunciation and translation. In short, these findings reveal that these students generally use learning strategies to be successful in English. However, successful students turn to acquisition more. They use language as a tool. They do not directly try to learn grammar, vocabulary and pronunciation. They are not very eager to have an output. They mostly watch, read, and listen. So, they acquire the language subconsciously.

DISCUSSION

The aim of this study was to investigate differences of strategies of language learners in learning and acquisition. In the study, “successful” and “less successful” language learners were compared in terms of their opinions in the interviews and Oxford’s SILL. From the study, it can be said that there are noticeable differences in terms of strategy preferences between successful and less successful students. When all data are scrutinized, it can be said that determining of styles and strategies are essential for all level students in foreign language teaching. The results demonstrate that

the university students use a variety of strategies in learning foreign languages. The findings in Oxford’s SILL above show that successful students proficiency levels have a statistically significant effect on frequency of all strategies in six categories- memory, cognitive, meta-cognitive, compensatory, affective and social. From the results it can be said that, the successful students use all kinds of strategies more than the less successful students.

According to the interview data analysis, the acquisition strategies, which involve reading and listening skills, are generally used by successful students. It is clear from the findings of this study that the more successful students use more acquisition strategies. Through the data, it can be said that acquisition has a very important role in language learning. Successful students spent significantly more time practicing language out of class and use acquisition strategies more than less successful students. When we look at the data as a whole, we conclude that strategies towards language acquisition and learning are the key factor between more successful and less successful students. This results are consistent with some researches in the literature (Wong and Nunan, 2011; Gan, 2004; Norton and Toohey, 2001).

CONCLUSION AND RECOMMENDATIONS

The findings of this study have implications for further research on language acquisition, language learning and strategy choosing (Table 14). Also, this study will be

Table 14. Learning and acquisition strategies.

Skills	Learning	Acquisition
Reading	Reading books; Looking up the new words; Do exercises related with the book; Memorization of the words and their meanings; Trying to understand the grammar of sentences; Trying to translate what is read; Highlighting grammar; Specific activities; Setting up tasks	Reading the books twice and more; Reading comprehensible texts and books; Reading the books and their translations; Predicting the meaning of new words; Listening to audios of the books; Watching the films and series of the books; Reading the books of same writer; Reading different materials on the same subject; Reading authentic materials; Reading the materials which the reader interested in; Using native language to understand the texts; Having background information about what you read; Reading the books based on same subject; Using computers and internet to have rich reading materials
Listening	Listening audio materials and looking up the new words; Memorization of the words and their meanings; Trying to understand the grammar of sentences; Trying to translate what is read; Watching audiovisual materials and doing exercises; Specific activities; Setting up tasks	Listening the books twice and more; Listening the books and their translations; Predicting the meaning of new words; Listening to audios of the books; Watching the films and series of the books; Listening to different audio materials on the same subject; Listening to authentic materials; Listening to the audio materials which the reader interested in; Using native language to understand the texts; Using not only the audio materials but also audiovisual materials; Listening to films with their subtitles; Having background information about what you listen; Listening and watching the materials based on same subject; Using computers and internet to have rich listening materials
Writing	Trying to learn the grammar; Dictation; Translation; Error correction; Highlighting grammar; Self-checking; Specific activities; Setting up tasks; Confirmation and correction	Listening and filling the blanks; Listening and completing the sentences; Listening and writing the summary; Listening and translation; Reading and filling the blanks; Reading and completing the sentences; Reading and writing the summary; Reading and translation; Real writing tasks; Having tasks organized from simple to complex; Discovering, clarifying, organizing ideas; Adopting integrated-skills approach; Developing expressing ideas
Speaking	Repetition; Trying to use correct grammar; Memorization of the new words and using these words in the sentences; Substitution exercises; Correcting mistakes; Having learned competence; Doing speaking activities ; Monitoring; Error correction; Highlighting grammar; Self-checking; Specific activities; Setting up tasks; Confirmation and correction; Communicative activities; Pronunciation; Feedback; Role plays	Having silent period for beginners; Having comprehensible input via listening and speaking; Having acquired competence; Focusing on meaning
Grammar	Learning grammar consciously by doing exercises, explanation and memorization; Doing practices; Correcting mistakes; Testing; Highlighting grammar; Self-checking; Specific activities; Setting up tasks; Confirmation and correction	Acquiring grammar subconsciously; Having silent period for beginners; Getting limited grammar explanations; Trying to increase the comprehensibility of the messages; Acquiring the rules automatically; Having comprehensible input via reading and listening; Focusing on meaning
Vocabulary	Doing vocabulary exercises; Memorization; Repetition; Specific activities; Setting up tasks; Learning multi-meaning of words, Word classes, Word families, collocations	Reading, listening and watching; Having comprehensible input; Focusing on meaning; Predicting the meaning of the words in texts

helpful to choose appropriate strategies for learners, teachers, instructors, and material designers. The results suggest that individual differences may influence

language learning. When we look at the data as a whole, we conclude that attitudes towards language learning and language acquisition are the key differentiating

factors between more successful and less successful learners. Successful students learn language eagerly.

According to them the language is just like a tool for involving in real world activities such as listening, watching, communicating, etc. rather than as an artificial learning atmosphere like classrooms. They enjoy language by different activities. They subconsciously acquire language by reading and listening. They don't care about making mistakes while learning. After having a silent period, they acquire language automatically.

In sum, the findings of this study shows that learners' strategies differ in acquisition and learning. The learning environment does not effect their preferences of strategies. Both in formal and non-formal environment, the learners do not quit their own strategies. Acquisition strategies appear to be frequently used by successful language learners, yet learning strategies are used by less successful learners. The study is important to be aware of the differences of strategies in acquisition and learning. Through this, the learners can notice the distinction between them, and modulate the strategies in language learning. Below, learning and acquisition strategies are submitted and by the help of this chart a person who wants to improve his/her language will be able to compare his/her strategies according to their styles, and choose the most suitable one (Table 14).

Conflict of Interests

The authors have not declared any conflict of interests.

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Appendix

Strategy inventory for language learning (SILL) version 7.0 (ESL/EFL)(Oxford, 1990). This form of the strategy inventory for language learning (SILL) is for students of English as a second or foreign language. Please read each statement and fill in the bubble of the response (1,2,3,4,5,6) 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

Part A

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

Part B

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

Part C

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

Part D

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

Part E

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

Part F

45. If I don't understand something in English, I ask the other person to slow down or say it again.
46. I ask English speakers to correct me when I talk.
47. I practice English with other students.
48. I ask for help from English speakers.
49. I ask questions in English.
50. I try to learn about the culture of English speakers.

Interview questions

1. Do you read books to learn English?
2. How do you learn vocabulary?
3. Do you spend a lot of time to study grammar?
4. How do you try to remember new information?
5. Do you listen to learn English?
6. Do you watch films in English?
7. Do you play games in computer?
8. Do you try to pronounce the words or the phrases you hear?
9. Do you participate in conversations in English?
10. Do you like to do different exercises in English?
11. Do you learn English only in English classes?
12. Do you spend time to study English by yourself?
13. Do you translate to learn English?
14. Do you test yourself in English?
15. Do you use authentic materials to learn English?
16. Do you do some writing exercises to learn English?

Full Length Research Paper

The relationships between self-regulated learning skills, causal attributions and academic success of trainee teachers preparing to teach gifted students

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The purpose of this research is to examine the self-regulated learning skills and causal attributions of trainee teachers preparing to teach gifted pupils, and also to study the predictive relationships between these skills and attributions, on one hand, and academic success, on the other hand. The research was conducted on 123 students attending the Gifted Teacher Training Program at Istanbul University, the first program of its kind to be initiated in Turkey. The instruments used for data collection were the Self-Regulated Learning Skills Scale (SRLSS), Causal Dimensions Scale II, and Great Point Average (GPA). According to the results obtained, girls scored higher in self-regulated learning skills such as planning and strategy using / assessment; they also scored higher in total self-regulated learning skills. Results for the lack of self-directedness sub-dimension showed statistically meaningful differences, with third-year students scoring highest, while there were also statistically meaningful differences in the locus of causality given as the reason for lack of success, with first-year students scoring highest. Correlation analysis showed a positive relationship between self-regulated learning skills and the causal focus subscale of causal attributions; between stability and personal control; and between scores for the planning, strategy using / assessment, and total self-regulated learning skills subscales of self-regulated learning skills on the one hand, and academic success on the other hand. However, it appeared that only the planning sub-dimension was a predictor of academic success. Finally, in the current study the subject of why the possession of these skills is important for trainee teachers preparing to teach gifted and talented students is discussed.

Key words: Self-regulated learning, causal attribution, academic success, teachers of gifted children.

INTRODUCTION

The characteristic of persons who are already teaching or who are preparing to teach gifted and talented children is a subject of debate. The studies conducted by Robinson

(2008) show that research into the characteristics of teachers of gifted and talented children focuses mainly on these teachers' demographic profile, their skills, their

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personal characteristics and their degree of competence. The investigations carried out by Feldhusen (1997), which focused on the personal characteristics of and degree of competence exhibited by such teachers, concluded that these persons should possess similar characteristics with the gifted and talented children. He also determined that these characteristics are of a kind which enhances the quality of any teacher or leader. On detailed examination of these characteristics, which are collated from the findings of various pieces of research and from a number of different sources, we notice that in features such as 'is well-organized, systematic', 'teaches students to evaluate themselves', 'is in control of her/his own life', 'provides guidance', 'encourages individual learning', 'is optimistic' and 'is effort-oriented rather than grade-oriented' (Feldhusen, 1997) are in fact parallel with self-regulated skills and causal attributions.

Stoeger and Sontag (2012), who carried out research on the ways in which gifted and talented students learn emphasize that current findings strongly indicate self-regulated learning. In addition, Wendel and Heiser (1989), in describing the characteristics of teachers of gifted and talented students, stated that such teachers should 'encourage independent study'. Accordingly, they maintain that teachers, coaches or mentors of gifted and talented children should plan, exercise self-monitoring, set goals for themselves and carry out self-evaluation. It is a well-known fact that if a teacher sees the reason not only for her/his own successes and failures, but also those of her/his students, as external, and thus as not being personally controlled or predictable, this will never have a positive effect on the learning process. In this regard, it is of great importance that both the degree to which individuals who are to teach gifted and talented students possess self-regulated learning skills, and the nature of these persons' causal attributions, should be determined; it is also important to ensure that trainee teachers of this kind are aware of these issues.

What is self-regulated learning?

From the socio-psychological perspective, self-regulated learning is part of the general theory of social cognition (Boekaerts et al., 2000). Zimmerman (2000) maintains that the individual's self-perception affects her/his self-regulated learning skills, and that these skills are unavoidably affected by the social and physical environment. Self-regulated learning has been related particularly to learning processes such as motivation and academic success, and is a subject that has attracted the interest of a number of researchers (Pintrich and De Groot, 1990).

Self-regulated learning is for the most part a process in which the student is an active participant. As stated by Schunk (1996), in order for an individual to bring about learning, s/he needs to set goals, determine how to reach

those goals, carry out these strategies and evaluate the learning outcome. Students can be said to possess self-regulated learning skills when they play an active role; from the cognitive, motivational and behavioral points of view in their own experiences of learning (Zimmerman, 1986). Stoeger (2013) stated that students are able to develop their own self-regulated learning processes from the age of nine. This is quite a young age, and the necessary measures need to be taken in learning environments so that the infrastructure for this development can be laid down. It is only in this way that the positive effects of self-regulated learning can be more effectively manifested in learning processes in maturity.

Those experts who have proposed models for self-regulated learning generally claim that it has a cyclical structure (Ziegler et al., 2012; Zimmerman, 1998). According to Zimmerman (2000), this cycle consists of the following processes: Forethought, performance, and self-reflection. The forethought phase contains task analysis (goal-setting and strategic planning) and self-motivating beliefs (self-efficacy, outcome expectations, and goal orientation). The performance phase is made up of the processes of self-control (self-instruction, focusing attention, and strategies) and self-observation. Lastly, the self-reflection phase is made up of the following processes: Self-judgment (self-evaluation, causal attributions) and self-reaction (e.g., satisfaction, adaptive/defensive attitudes) (Zimmerman, 2000). Ziegler et al. (2012) speak of a cyclical structure consisting of seven steps. It is expected that in the first step, the individual will evaluate her/his own learning; in the second, s/he will set a learning goal appropriate to her/himself; in the third, s/he will identify an effective learning strategy; in the fourth, s/he will put this learning strategy into practice; in the fifth, s/he will carry out self-observation; in the sixth, s/he will adjust her/his learning strategies; and in the seventh, s/he will evaluate her/his learning outcomes.

Several studies have examined the relationship between self-regulated learning and success. In a longitudinal study conducted on lycée students, Nota et al. (2005) found that the possession by students of self-regulated learning skills affected their degree of success, and even that it predicted their average grades. The results of other studies show that educational programs designed to develop self-regulated learning skills have an effect on success (Perels et al., 2009). Researches conducted on university students find that successful students use self-regulated learning skills to a greater extent than the less successful do.

What is the theory of attribution?

The 'Theory of Attribution', put forward in order to facilitate a better understanding of individuals' behavior, has long been seen as lying within the field of research of psychologists and those concerned with management

Table 1. Classification of attribution theory according to the causal dimensions

Attribution	Ability	Effort	Difficulty	Luck
Interior	xx	xx		
Exterior			xx	xx
Stable	xx		xx	
Inconsistent		xx		xx
Controllable		xx		
Not controllable	xx		xx	xx

Blefare (1994).

(Bettman and Wieitz, 1983; Weiner, 1985). The actions of individuals are shaped by their interpretation of the successes and failures that result from previous experiences, and this affects their motivation. The process of understanding the reasons for the individual's own behaviors, or those of others, is defined as 'causal attribution'. The theory of 'attribution' focuses (firstly) on the reasons why a particular event, situation or result occurs, and (secondly) on explaining the consequences of this causality (Weiner, 2000a). According to Weiner (2000b), it is especially when the individual encounters an unexpected negative result that s/he devotes thought to the reason, whereas an expected positive result does not give rise to such prolonged reflection.

The question of success and failure is studied from three aspects: Focus, stability and control (Weiner, 2000a). The focus aspect is concerned with the source (interior or exterior) of the cause; the stability aspect with its continuity; and the control aspect with the question of whether or not control over the situation can be achieved (Stipek, 1988). Weiner (2000b) groups the perceptual factors affecting the individual's performance under four headings: perceived ability, effort, luck, and the difficulty of the task involved. Causes such as ability and effort are 'interior'; causes such as the circumstance of someone having provided help are 'exterior'. Ability is stable in that it is permanent; luck is inconsistent, and therefore cannot be a source of 'stability'. Effort is a cause over which the individual may have control; ability, however, is generally perceived as being beyond control from the individual's point of view (Table 1). In some situations, there is a conflict of attributions since different reasons for success or failure are put forward by different people. As an example of this, students may attribute their lack of success in an examination to the difficult questions asked by the teacher (an exterior cause), while the teacher may attribute the students' lack of success to the insufficiency of the effort put forward by them (Koçyiğit, 2011).

As stated by Kızgın and Dalgın (2012), the process of attribution enables one to search for and understand the reasons for an event, to ascertain who exactly the people responsible for it are, and to comment (according to the attributions made) on the personal characteristics of the individuals concerned. Persons who attribute reasons for

events to internal factors, and who thus give importance to effort in the knowledge that it is through effort that continuity and control can be achieved, are able to make more reliable assessments of their successes and failures.

Causal attribution is a subject which has only recently been included in studies of success and failure in the field of education (Buchanan and Seligman, 1995). However, different researches into the relationship between various kinds of attribution and academic success have yielded conflicting findings. Some pieces of research have found that students with negative causalities have lower grade averages than students with positive causalities (Peterson and Barret, 1987; Schulman, 1995); other studies have shown that those with negative causalities have higher grade averages (Satterfield et al., 1997). Research carried out by Kızgın and Dalgın (2012) has found that the reason most often given by students for their failures is the 'difficulty of the task' factor, while the reason least often given is 'ability'; their successes are most often attributed to 'effort', and least often to the 'difficulty of the task' factor.

Self-regulation and attribution

As stated above, according to Zimmerman (2000), one of the phases of self-regulation is that of self-reflection. In this phase, which begins with self-evaluation, the individual compares her/himself with others, and wishes to obtain rapid and accurate feedback on her/his performance. Self-evaluation leads the individual to reflect on the subject of to what s/he is to attribute her/his successes or failures (Nokelainen et al., 2007). Causal attributions may give rise to positive or negative behaviors. If the individual attributes her/his failure to paucity of effort, this will result in the manifestation of positive behaviors next time as s/he will now put forth greater effort; if, on the other hand, this failure is attributed to bad luck or lack of ability, the result will be negative behaviors as s/he will not put forth effort next time.

Causal attributions do not only permit one to learn from one's mistakes during the learning process; they also

bring about a reorganization of the learning process and, if necessary, the making of adjustments to it. This is where the sixth step of the self-regulated learning process as put forward by Ziegler et al. (2012), that is, the skill of making adjustments to learning strategies, comes into play. The individual will only be able to make the proper adjustments to her/his strategies or behaviors if s/he can first make accurate causal attributions. According to Nokelainen et al. (2007), because the self-reflection phase affects the self-evaluation, goal-setting and self-efficacy processes, it occupies an important place in the process of self-regulation. For this reason, it is important to research its relation to causal attributions (which are a part of self-reflection). Accordingly, the purpose of the current study is to ascertain the self-regulated learning skills and causal attributions of trainee teachers preparing to teach gifted and talented pupils, and to identify the relationship between self-regulated learning skills, causal attributions and academic success.

METHODS

The design of this study

In this study, the correlational comparative survey method was used. Correlational comparative models are research models designed to ascertain whether or not two or more variables change together, and if so to what extent (Karasar, 1994). As stated by Karasar (2009), although they possess certain limitations they have a wide application, and are seen as the best alternative when experimental models are not used.

Population and sample

In determining the sampling method of the study, the intentional sampling method known as the 'easy access sampling method' (Yıldırım and Şimşek, 2008) was chosen for the advantages it provides from the point of view of purpose sampling and ease of access. The sample for the study was made up of 123 trainee teachers (32 men, representing 26%, and 91 women, representing 74%) attending the Gifted Teacher Training Program, the first program of its kind to be initiated in Turkey. Of these 123 trainee teachers, 28 (that is, 22.8%) were first-year students, 34 (that is, 27.6%) were second-year students, 38 (that is, 30.9%) were in their third year, while 23 (that is, 18.7%) were in their fourth year.

These trainee teachers were students in faculty of education in University of Istanbul, Turkey. They entered to this program as all other university students in Turkey by giving exams and select a program according to their points. All of the trainee teachers of the sample were attending the Gifted Teacher Training Program, that has a fixed educational program for all teacher candidates. The difference of the program from Primary Teacher Training Program is that it includes lectures about giftedness and the education of gifted students such as: Introduction to Gifted Education, Creativity, Teaching the Gifted Students in Regular Classrooms etc. However, none of the trainee teachers were tested according to their intelligence. Whether they were gifted or not they intend to teach gifted students when they will graduate.

Evaluation instruments

The Self-Regulated Learning Skills Scale (SRLSS): The SRLSS

was developed by Turan and Demirel (2010) in order to measure the self-regulated learning skills of university students. It consists of 41 items in four dimensions. 7 of the items are related to motivation/action to learn; 8 are related to planning/goal-setting; 19 relate to strategy using/assessment; and 7 to lack of self-directedness in learning. As stated by Turan and Demirel (2010), these dimensions include the stages that are defined by Zimmerman (1998) as 'theoretical' for self-regulated learning, and also include motivation.

All items on the SRLSS were answered on a 5-point Likert-type scale: from (1) 'I completely disagree' to (5) 'I completely agree'. The scale has a KMO coefficient of 0.95, and a Barlett test significance of $p < 0.01$. For the lower dimensions, the Cronbach alpha coefficients are 0.79, 0.86, 0.89 and 0.78 respectively; for all items, the alpha is 0.92 (Turan, 2009). According to current study findings, the Cronbach alpha coefficients for the lower dimensions are 0.77, 0.89, 0.90 and 0.67 respectively; for all items, the Cronbach alpha is 0.86.

The Causal Dimensions Scale II: This scale was developed by McAuley, Duncan, and Russell (1992) in order to evaluate causal attributions in students' explanations for their successes and failures, and was translated into Turkish by Koçyiğit (2011). The scale evaluates causal attributions in 4 dimensions (locus of causality, external control, stability, and personal control), and consists of 12 items. In each item, there are two contradictory statements, and the participant is asked to evaluate whichever of these two statements s/he feels closer to, scoring the degree of closeness on a scale from 1 to 9. A high score obtained from the subscales shows that the cause is internal, stable and personally controllable. The scale's KMO coefficient is 0.82, and the Barlett test result has a significance level of $p < 0.01$; for the subscales, the Cronbach alpha coefficients for success attributions are 0.66, 0.75, 0.77 and 0.56 respectively, while findings for failure attributions are 0.71, 0.74, 0.77 and 0.65 respectively. In the findings of the current study, success attributions are calculated at 0.73, 0.52, 0.50 and 0.79 respectively; failure attributions are calculated at 0.80, 0.76, 0.68 and 0.64 respectively.

Academic success: Data relating to students' degree of academic success were obtained from faculty records. Degree of academic success, expressed in terms of Great Point Average (GPA), is expressed by means of the end-of-term weighted grade averages achieved by students in the subjects they took in the spring term during the 2014 to 2015 academic year. At Hasan Ali Yücel Faculty of Education, where the students were registered, a relative evaluation system is used in the process of evaluation, which forms the basis of the measuring of academic success.

The process of data collection

Data collection instruments were applied during the spring term of the 2014 to 2015 academic year. Before the scales were applied, some brief information was given to students on the aim of the study. The two scales were administered consecutively, and each one took an average of 30 min. In addition, in order to ascertain students' degree of academic success, access to the relevant faculty's records was gained, and students' GPA scores were obtained.

Data analysis

The SPSS package program was used in analyzing the data. The test of normality results showed that parametric statistical techniques can be used, so t-test used to analyse the gender differences, ANOVA to analyse the grade differences and Pearson

Table 2. Means, standard deviations and t-test scores of self-regulated skills according to gender.

Subscales	Gender	n	x	SD	Df	t	p
Motivation and action to learning	Female	91	28.62	3.34	121	-1.24	0.214
	Male	32	27.75	3.59			
Planning	Female	91	32.05	4.87	121	-3.33	0.001***
	Male	32	28.53	5.83			
Strategy using and assessment	Female	91	74.74	8.72	121	-2.67	0.009**
	Male	32	69.96	8.64			
Lack of self-directedness	Female	91	17.37	4.26	121	1.75	0.082
	Male	32	18.96	4.86			
Total self-regulated skills	Female	91	152.80	13.34	121	-2.74	0.007**
	Male	32	145.21	13.80			

Table 3. Means, standard deviations and ANOVA results of self-regulated skills according to grade.

Skill	1 st Grade (n=28)	2 nd Grade (n=34)	3 rd Grade (n=38)	4 th Grade (n=23)	F	p
Motivation and action to learning	28.25 (3.38)	28.5 (3.15)	28.39 (3.44)	28.43 (3.98)	0.028	0.994
Planning	31.75 (4.23)	30.23 (6.67)	30.84 (4.46)	32.21 (5.74)	0.793	0.500
Strategy using and assessment	74.46 (7.53)	72.94 (11.7)	73.13 (6.58)	73.78 (9.55)	0.179	0.910
Lack of self-directedness	16.35 (3.27)	17.85 (5.60)	19.78 (3.24)	16.13 (4.47)	50.01	0.003**
Total self-regulated skills	150.82 (11.79)	149.52 (17.34)	152.15 (10.69)	150.56 (15.43)	0.216	0.885

**p< .01.

Correlation to analyse the correlations among self-regulated skills, attributions and academic achievement.

FINDINGS

In the results of the Kolmogorov-Smirnov test carried out to test normality for self-regulated learning skills, the level of significance was found to be 0.200 (KS=0.054, df=123). Therefore, parametric statistical techniques were used in the analysis of the data.

Self-regulated learning skills of trainee teachers of gifted and talented children

The self-regulated learning skills of trainee teachers on the Gifted Teacher Training Program were examined based on sex and class-year variables.

Results on the question of whether or not the self-regulated learning skills of trainee teachers showed variation according to sex are shown in Table 2. As will be seen from this table, meaningful differences were found in the scores for the self-regulated learning skills of planning/goal-setting ($p<.001$), strategy using/evaluation ($p<.01$), and total self-regulated learning skills ($p<.01$),

with girls scoring higher. In other sub-skills, no differences were found with regard to sex.

Results in terms of whether or not trainee teachers' self-regulated learning skills showed variation according to the class year they were in are shown in Table 3. Significant differences between class years in terms of self-regulated learning skills were observed only in the lower dimension of lack of self-directedness ($p<.01$). Post Hoc (Bonferroni) analysis revealed meaningful differences between third-year students on one hand, and first and fourth year students on the other, with third-year students scoring higher ($p<.01$ for each class year).

Causal attributions of trainee teachers of gifted and talented children

Examination of all mean scores showed that in the matter of trainee teachers' causal attributions relating to success, figures for the belief that it was personally controllable were $x=22.40$, $ss=4.46$, those for the belief that the locus of causality was internal were $x=22.13$; $ss=4.82$, those for the belief that stability was permanent were $x=18.73$; $ss=4.80$, and those for belief in the relative external controllability of success were $x=12.43$; $ss=5.50$. As for failure, it was found that the belief that this was

Table 4. Means, standard deviations and t-test scores of attributions relating to success and failure according to gender.

Attribution	Subscale	Gender	n	x	SD	Df	t	p
Attributions relating to success	Locus of causality	Female	91	22.13	4.61	120	0.029	0.977
		Male	31	22.16	5.47			
	External Control	Female	91	12.37	5.53	120	0.208	0.835
		Male	31	12.61	5.49			
	Stability	Female	91	18.65	4.98	120	0.307	0.759
		Male	31	18.96	4.30			
Personally controllable	Female	91	22.31	4.28	120	0.350	0.727	
	Male	31	22.64	4.76				
Attributions relating to failure	Locus of causality	Female	91	12.16	6.73	120	1.52	0.131
		Male	31	14.38	7.77			
	External Control	Female	91	17.72	6.10	120	-0.680	0.498
		Male	31	16.83	6.63			
	Stability	Female	91	13.52	6.19	120	-0.773	0.441
		Male	31	12.51	6.40			
	Personally controllable	Female	91	13.32	6.95	120	0.242	0.809
		Male	31	13.67	7.30			

subject to external control registered was $x=17.49$; $ss=6.22$; the belief that it was relatively personally controllable was $x=13.41$, $ss=7.01$; the belief that it was more impermanent was $x=13.26$, $ss=6.24$), and the belief that the locus of causality was external factors was $x=12.73$, $ss=7.05$.

In addition, trainee teachers' causal attributions for success and failure were examined based on sex and class-year variables. As shown in Table 4, causal attributions for success or failure showed no significant differences from the sex variable.

When trainee teachers' causal attributions for success and failure were analyzed based on the class-year variable, a significant difference was observed only in the 'locus of causality' lower dimension in respect of causal attributions for failure. Advanced Post Hoc Bonferroni analysis revealed significant differences between the first and second years ($p < .05$), between the first and third years ($p < 0.01$) and between the first and fourth years ($p < 0.05$), with first-year students scoring highest (Table 5).

Relationships between the self-regulated learning skills, causal attributions and degrees of academic success exhibited by trainee teachers of gifted and talented children

Table 6 shows the relationship between causal attributions relating to success and self-regulated learning skills on one hand, and academic success on the other; Table 7 shows the relationship between causal attributions relating to failure, on one hand, and self-regulated learning and academic success, on the other hand.

As can be understood from Table 6, a positive correlation was observed between self-regulated learning skills (planning/goal-setting, strategy using/evaluation, and scores for total self-regulated learning) and degree of academic success. No relationship was observed between the subscales of causal attribution relating to success and degree of academic success. However, a positive correlation was observed between the locus of causality subscale and the following: Motivation/action to learn; planning/goal-setting; strategy using/evaluation; and total self-regulated learning skills. Positive correlations were found between the 'stability' lower dimension of causal attributions relating to success and the lower dimensions of self-regulated skills, with the exception of lack of self-directedness (negative correlation). Also, significant positive correlations were found between personal control and motivation, and between strategy using/assessment and scores for total self-regulated learning skills.

When the relationship between self-regulated learning skills, causal attributions relating to failure and degree of academic success are examined (Table 7), it is seen that the correlations between the lower dimensions of causal attribution and self-regulated learning disappear. Just as in the case of causal attributions relating to success, no relationship was found between attributions relating to failure and degree of academic success.

Regression analysis

In order to determine to what extent the causal attributions relating to success of trainee teachers of gifted and talented children predict their self-regulated learning skills (Table 8), and to what extent their self-regulated learning

Table 5. Means, standard deviations and ANOVA results of attributions relating to success and failure according to grade.

Attribution	Subscale	1st Grade (n=28)	2nd Grade (n=34)	3rd Grade (n=38)	4th Grade (n=23)	F	p
Attributions Relating to Success	Locus of causality	23.75 (3.27)	21.24 (4.98)	21.47 (5.23)	22.56 (5.20)	1.75	0.160
	External Control	11.21 (4.80)	13.42 (6.91)	12.76 (5.42)	11.95 (3.93)	.916	0.436
	Stability	19.71 (4.66)	18.45 (5.22)	18.23 (3.91)	18.73 (4.80)	.555	0.646
	Personally controllable	23.64 (3.62)	22 (3.97)	21.76 (4.93)	22.52 (5.15)	1.07	0.362
Attributions Relating to Failure	Locus of causality	16.78 (7.43)	11.90 (5.98)	11.36 (6.34)	11.21 (7.60)	4.40	0.006**
	External Control	15.67 (7.22)	18 (5.78)	17.73 (6)	18.6 (5.8)	1.13	0.339
	Stability	12.10 (6.41)	14.06 (6.53)	13.23 (6.39)	13.60 (6.24)	0.513	0.674
	Personally controllable	14.60 (7.78)	13.59 (6.73)	13.34 (7.13)	11.82 (6.34)	0.665	0.575

Table 6. Correlations for the self-regulated skills, attributions relating to success and academic achievement.

S/N	Self-regulated skills	2	3	4	5	6	7	8	9	10
1	Motivation and action to learning	0.480**	0.591**	-0.297**	0.719**	0.250**	0.004	0.255**	0.251**	0.147
2	Planning		0.660**	-0.454**	0.786**	0.196*	-0.085	0.252**	0.166	0.379**
3	Strategy using and assessment			-0.437**	0.906**	0.309**	-0.141	0.263**	0.293**	0.243*
4	Lack of self-directedness				-0.208*	-0.129	0.171	-0.200*	-0.154	-0.169
5	Total self-regulated skills					0.296**	-0.068	0.266**	0.266**	0.277**
6	Locus of causality						-0.472**	0.424**	0.773**	0.037
7	External control							-0.079	-0.452**	-0.020
8	Stability								0.383**	-0.039
9	Personally controllable									0.053
10	Academic achievement									

*p< 0.05; **p< 0.01.

skills predict their degree of academic success (Table 9), regression analyses were carried out. As no correlation was found between causal attributions relating to failure and self-regulated learning skills on the one hand, and degree of academic success on the other, this analysis was not performed.

Similarly, causal attributions were not included in the analyses predicting degree of academic success because no correlation was found between causal attributions and degree of academic success.

As shown in Table 8, according to regression analyses carried out in order to determine to what

extent causal attributions predict self-regulated learning skills, stability predicts 6% of motivation/ action to learn and planning/goal-setting, and predicts 4% of the lack of self-directedness subscale; locus of causality predicts 9% of strategy using/evaluation, and 8% of total self-regulated learning skills. The results of the regression

Table 7. Correlations for the self-regulated skills, attributions relating to failure and academic achievement.

S/N	Self-regulated skills	2	3	4	5	6	7	8	9	10
1	Motivation and action to learning	0.480**	0.591**	-0.297**	0.719**	-0.123	0.101	0.078	-0.039	0.147
2	Planning		0.660**	-454**	0.786**	-0.003	0.047	0.013	0.035	0.379**
3	Strategy using and assessment			-437**	0.906**	-0.004	0.075	-0.033	0.035	0.243*
4	Lack of self-directedness				-0.208*	0.094	-0.055	-0.005	-0.033	-0.169
5	Total self-regulated skills					-0.004	0.074	0.001	0.016	0.277**
6	Locus of causality						-0.562**	-0.057	0.588**	-0.054
7	External control							0.133	-0.421**	0.073
8	Stability								-0.270**	0.014
9	Personally controllable									0.041
10	Academic achievement						-0.562**	-0.057	0.588**	-0.054

*p<.05; **p<.01.

Table 8. Stepwise regression analysis of self-regulated skills on attribution.

Model	Motivation and action to learning			Planning			Strategy using and assessment			Lack of self-directedness			Total self-regulated skills		
	1 st Step			1 st Step			1 st Step			1 st Step			1 st Step		
	β	<i>t</i>	<i>p</i>	β	<i>t</i>	<i>p</i>	β	<i>t</i>	<i>p</i>	β	<i>t</i>	<i>p</i>	β	<i>t</i>	<i>p</i>
Stability	0.182	2.88	**	0.281	2.85	**	0.573	3.55	***	-0.186	-2.23	*	0.849	3.39	***
ΔR		0.065			0.064			0.095			0.040			0.080	

*p< 0.05; **p< 0.01; ***p < 0.001.

Table 9. Stepwise regression analysis of self-regulated skills on academic achievement.

Model	Academic achievement		
	1 st Step		
	β	<i>t</i>	<i>p</i>
Planning	0.182	4.08	***
ΔR		0.135	

***p < 0.001.

performed in order to find out how far self-regulated learning skills dimensions predict academic success show that the planning/goal-setting subscale predicts 13% of academic success (Table 9).

DISCUSSION

In the discussion of what standards teachers and trainee teachers of gifted and talented students should meet, standards (in terms of both knowledge and skills) in matters such as the creation of environments in which pupils can work independently, awareness of individual differences and the necessity to activate pupils' motivations were cited (Van Tassel-Baska and Johnsen, 2007). It is thought that in order for a teacher to come up to these standards, the basic requirement is that s/he should first possess these skills her/himself. It is within this context that in the current study, the self-regulated learning skills and causal attributions of individuals preparing to teach gifted and talented students are examined based on sex and class-level variables; the relationships between self-regulated learning skills, causal attributions and success are explored, and the question of to what extent self-regulated learning skills and causal attributions predict success is addressed.

When the self-regulated learning skills of trainee teachers were analyzed based on sex variable, significant findings showing higher scores for girls in the majority of sub-skills were obtained. The findings of the current study are in parallel with those of a number of other studies (Wolters, 1999; Zimmerman and Martinez-Pons, 1990). The findings of the research into university students' self-regulated learning skills carried out by Bidjerano (2005) show consistently higher, and significant, scores for girls in most of the subscales. It may be thought that this may be explained in terms of stereotyped views on how girls ought to behave in academic environments, where they are expected to be better-organized, better at planning, and able to make better use of a variety of strategies. In fact, in the studies carried out by Pajares and Valiante (2002), it is emphasized that the differences between the sexes seen in the academic environment are due not so much to these differences themselves, as to the expectations of society and to stereotyped attitudes, in the same way as girls are expected to be weaker than boys in subjects such as mathematics. Whatever the reason for the differences between the sexes in the matter of self-regulated learning skills may be, it is clear that male trainees preparing to be teachers of gifted and talented students need to develop these qualities in themselves. Thus, it is recommended that in future, male trainee teachers should undergo training designed to develop their self-regulated learning skills.

In the analysis of self-regulated learning skills based on the class-level variable, a significant difference was found

only in the lack of self-directedness subscale with regard to third-year students, who scored higher. Lack of self-directedness indicates a focus on the environment, as well as the feeling of a need for direction, in the taking of decisions with regard to learning (for example, decisions as to what is to be studied, and how). Although the study did not produce any findings in this matter, students in the third class year of the Gifted Teacher Training Program during the 2014 to 2015 academic year were seen by the researcher to be more in communication with the teachers in their department, and more open to guidance with respect to their future, in comparison with students in the other class years. The level of awareness of this issue among first- and second-year students was usually not high; however, as the future was more clear-cut for students in their fourth year, it is surmised that the difference observed in third-year students may be ascribed to a similar reason.

When the causal attributions for success and failure of trainee teachers of gifted students were examined, no difference was found with regard to sex. This finding parallels the results of the studies carried out by Koçyiğit (2011) and Can (2005). The findings of both studies and the current one may be said to have shown that sex does not affect causal attributions. In the comparison of class levels, differences were observed only in the locus of causality for causal attributions relating to failure, with first-year students recording higher scores. In the light of these findings, it was established that for first-year students just starting the program (in comparison with students in other class years), the locus of causality with regard to failure is more internal in nature, that is, when they experience failure, they find the cause in themselves rather than seeking it in external factors. As they move up the class levels, students tend to attribute failures more to external causes such as 'the teacher for the subject' or 'bad luck'. First-year students, who have recently been through the process of taking the university entrance examination, have had recent experience of the fact that in the struggle to get into university, the only variable is the degree of effort they themselves put forth. It is thought, however, that as time goes on there will be a greater tendency for them to attribute failures, in particular, to external factors.

In the matter of the relationships between self-regulated learning and causal attributions relating to success, we see a positive correlation between motivation, planning/goal-setting, strategy using / assessment and total self-regulated learning on the one hand, and locus of causality, stability and personal control on the other. This shows that in accordance with expectations, as the locus of causality becomes more and more internal, as personal control grows and as stability is perceived more and more as permanent, self-regulated learning skills (with the exception of lack of self-directedness) increase. The desired aim is to ensure that students in all groups are self-regulated, and that they

possess internal motivation. In fact, the findings of a number of studies mention the effect that inner motivation has on success (Gottfried, 1983; Zimmerman and Martinez-Pons, 1988). Also, quite a large number of self-regulated learning models especially that of Zimmerman (2010), draw attention to the individual's inner processes. Although self-regulated learning develops for the most part from skills learned from external sources, it is a process that comes about within the individual. Thus, it is to be expected that individuals whose causal attributions are internal, who see themselves as the source of personal control and who are aware of the importance of stability, should possess a higher level of self-regulated learning skills. The point that needs to be emphasized here is the necessity for measures to be taken so that individuals who have negative causal attributions receive training in order to improve their self-regulated learning skills.

In search of determining to what extent causal attributions relating to success predict self-regulated learning skills, it is apparent that stability predicts the subscales of motivation/action to learn, planning/goal-setting, strategy using/assessment, and lack of self-directedness; locus of causality predicts strategy using/assessment and total self-regulated learning skills. Causal stability is related to whether or not an attributed cause is subject to change (Feshbach and Weiner, 1991). In this context, it may be said that stability in the matter of giving importance to external factors when decisions on motivation, planning and learning are taken is important from the point of view of the displaying of self-regulated learning skills. It may be thought that the more stable a person is, the better s/he will perform in these three lower dimensions. As Pintrich (2004) points out, one of the commonly-held assumptions on the subject of self-regulated learning skills is that students are in control of their own studies, and that they possess self-observation skills. The findings of the current study tend to support this assumption. When students are planning their own learning and are motivating themselves, etc., they have the potential to be stable. In the same way, to the extent that they find the locus of causality in themselves, they are also able to control their self-regulated learning. In this regard, the important thing is that trainee teachers should be provided with training designed to show them that they possess this potential. Only in this way might it be possible for them to pass these skills on to their own pupils in the future.

Zimmerman and Schunk (1989) were among the first who studied the relationship between self-regulated learning and academic success. The current study, paralleling the findings of various different studies based on different populations (Garrido-Vargas, 2012), has also identified a positive correlation between self-regulated learning components and academic success. However, the current study shows that only the planning/goal-setting dimension predicts success. In fact, the finding of the study carried out by Turan and Demirel (2010) is that the

group that had significantly higher academic achievement also had higher scores in the planning/goal-setting subscale than other groups. This finding underlines once again the importance of planning and goal-setting for success (Pintrich, 2000).

Finally, some limitations with regard to the study need to be touched on. The fact that pen-and-paper tests were used may be thought of as a limitation. However, this is only one of the limitations that social sciences inevitably bring with them. In addition, the fact that students' levels of academic success were calculated according to the GPA scores obtained may be seen as another limiting factor. Lastly, the study was limited to students attending to the gifted teacher training program at only one university. One of the most important reasons for this was that at other universities in our country, this undergraduate program has not yet produced any graduates.

Conclusion

In view of the findings of the current study, it is considered of great importance that individuals training to be teachers of gifted and talented children should have their causal attributions, and especially their self-regulated learning skills improved and developed. In this regard, it is recommended that future studies should include experimental work, and that training programs designed to develop these skills in trainee teachers should be prepared and carried out. In conclusion such training programs could help teachers of gifted and talented children to achieve the necessary standards, and that as a result these teachers could be able to educate students with special needs of this kind in a more effective way, and indeed, the studies carried out by Hansen and Feldhusen (1994) lend support to this belief.

Conflict of Interests

The author has not declared any conflicts of interests.

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Full Length Research Paper

Correlation between teaching styles of candidate music teachers and mentor music teachers

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Music teacher candidates spend part of their Bachelor education in practice schools with mentor teachers before starting work. Observing music teachers in the classroom empower candidates to understand how music teaching and learning occur in classrooms, and also enlightens them on how mentor teachers teach, which then expands their awareness about different teaching styles. This research compares candidate music teachers' preferences in teaching styles and their perceptions of mentor teachers' teaching styles. The research was conducted using the quantitative approach with survey methodology. The survey was administered during the autumn teaching semester of 2015 to 2016. Two hundred eighteen candidate teachers participated in the survey, selected randomly from education faculties under the fine arts music education departments of seven Turkish state universities. The research data was collected by the Teaching Style Inventory developed by Grasha. The datasets were analyzed by linear regression analysis (simple linear regression). The research findings concluded that candidate teachers' own teaching style has a significant relation with mentor teachers' teaching styles. Therefore, they are sensitive to the teacher's mentor role in forming their own teaching styles.

Key Words: Music teacher candidates, mentor teacher, teaching styles.

INTRODUCTION

Practice schools, in pre-service music teacher education programs, provide candidate teachers opportunities to observe and examine music teaching in classrooms, and later require them to put their experiences and knowledge into action. Candidate teachers perform teaching-learning activities to understand the circumstances of music teaching as a profession. Teaching in a real school, different from studying in the faculty, allows candidate teachers to understand the real world of teaching and enables them to achieve integration between theory and practice. Norman and Feinman-Nemser (2005) stated that music teachers have two jobs to do during this

period, "they have to teach and they have to learn to teach in a particular context".

Many studies pointed out that "school practice" can only achieve the expected purpose with effective collaboration between the faculty and school at a macro-level and, similarly, between the student and mentor teachers at a micro-level (Uçar, 2012). Observation of mentor teacher's routine classroom activities, such as:

1. Classroom management and organization
2. Assessment-evaluation-feedback approaches
3. Use of teaching materials, and

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4. Communication styles with children prepares and allows candidates to understand their profession's responsibilities.

Davis (2009) stated that school practice is a precipitous leap from university music method classes to student teaching, and music teacher candidates must be willing to accept the expertise and examples offered by the music mentors. Support from experienced teachers is crucial for the development of candidate teachers. Researchers in music education (Conway and Garlock, 2002; Conway and Zerman, 2004; DeLorenzo, 1992; Haack, 2003; Kreuger, 1996) consistently report that candidate music teachers share feelings of being overwhelmed by the duties and responsibilities of teaching such as daily lesson plans for multiple grade levels, classroom management, and unforeseen administrative tasks or after-school responsibilities.

Many international studies have shown that candidate teachers perceive their mentors to be one of their most important sources of support during school practice (Carter and Francis, 2001; Lindgren, 2005). Mentoring positively impacts their developing teaching competencies, and plays a key role in their socialization process and provides emotional and psychological support (Crasborn et al., 2011). Richter et al. (2013) categorized the goals of mentoring in three distinctive groups:

1. Instructional support; assistance with planning, advice on classroom management, instruction related advice, and feedback help with assessing students' work.
2. Psychological support; building confidence, encouraging, helping to build self-esteem, listening, and enhancing self-reliance.
3. Being a role model when candidate teachers observe their mentor's teaching.

These authors also note that although candidates complete many teaching hours during their own time at school, teaching practice enables their professional knowledge to reflect on their observations. This provides them the opportunity to analyze teaching from an external perspective. Empirical research has shown that candidate teachers draw conclusions for their own teaching from watching their mentors teach (Feinman-Nemser and Buchmann, 1987).

Role models whom candidate teachers admire will influence their teaching style. Candidate teachers tend to unconsciously imitate a teacher who they find inspirational or avoid imitating a teacher who uses a style that makes them uncomfortable. As a matter of fact, appointing mentors who are more open to communication with candidate teachers will increase practice efficiency.

Schon (1987) defines the mentor teacher as a friend criticizing and helping the candidate teacher to develop sensible thoughts. Braund (2001) describes the mentor teacher as a reflective practitioner dealing with the

pedagogic problems of the candidates, and how they could adapt and improve within their future teaching conditions. Hopper (2001) considers the mentor teacher as an equal stakeholder working with the candidate's teacher (Basturk, 2009). However, Shantz (1995) mentions the lack of congruency between what students are taught at the faculty and what they view and are expected to do in practice. The following quotations from candidate teachers showed their concerns about working between two institutions with incongruent views:

"Carefully select associates through interviews to see if their teaching style is ideal to what the university teaches..."

"Associates want carbon copies of themselves; some do not even know about new theories..."

"Select associate teachers that implement the teaching styles discussed at the faculty..."

Shantz (1995) wrote that associate teachers tend to see their role as providing experience where students enter their classrooms and deliver a program similar to the one they deliver. Shantz (1995) discussed the purposes and efficiency of education programs. She stressed that faculties and schools need to develop mutually beneficial partnerships to enable student teachers to learn about new teaching methodologies and encourage them to practice innovative methodologies.

National studies show that candidate teachers cannot receive enough help and guidance, and also cannot communicate effectively with mentor teachers. Candidate teachers were not aware of the significance of the mentor's role because of their lengthier presence in the faculty and felt more responsible to their lecturers (Kiraz, 2002; Özbek and Aytakin, 2003; Çakır et al., 2010). Similarly, candidates believe that mentors do not provide sufficient instruction and suitable experiences and interactions for improvement (Hobson, 2002; Walkington, 2007). Uçar's (2012) case study with school administrators, mentors, and teacher candidates revealed that school practices could not achieve their aim due to mentor teachers' lack of present theoretical knowledge related to the "constructive learning approach".

A review of literature about candidate teachers' experiences suggests that many mentoring programs do not provide an effective induction for many music educators (Conway, 2001; Conway et al., 2002; Krueger (1999) discovered a lack of team teaching support and suggested that new teachers be given opportunities to team teach with an experienced teacher as a way of receiving supportive interaction and feedback while teaching.

Kiraz (2003) states that mentor teachers should avoid imposing teaching approaches on candidate teachers. Every teacher has his/her own teaching method. Teaching styles should not be identical; candidate teachers should form their own approaches instead of

copying their mentors. “Reflective teaching” or “critical reflection” improves teaching (Fullan and Hargreves, 1991); observing and reflecting on one’s own teaching is important. Barlett (1990) discusses the fact that no other processes except reflective practice could best serve teachers’ needs to constantly improve their “teaching style” while asking themselves “*what* and *why*”. Studies show that reflective teaching skills should be developed within the communication between the mentor and candidate teachers, and high interaction models must be created for the training of a qualified teacher.

Özdemir and Çanakçı (2005) in a qualitative study, analyzed the candidate teachers’ point of view on the concepts of “teaching and learning” before and after taking the lesson “*School practices I*”. They emphasized that the teacher candidates gradually move away from the traditional teaching approach and embrace the contemporary understanding of teaching. For instance, a group of students highlighting that “teaching is transmitting knowledge” changed its definition to “teaching is guiding”. The teacher candidates would define the teaching process as lecturing in class, giving, and assessing homework. However, after their school practices, they define this course as a teacher activating/stimulating the student with various methods and techniques, dealing with all the students individually, and encouraging the students to think. Furthermore, students highlighted the importance of authority in teaching, at first relating this authority with marks; they shifted to emphasize the need for planning and creating good communication methods for the authorities.

In conclusion, life at school and the teaching scope of the mentor is exceedingly significant for candidates to form their own teaching style. The teacher’s attitude in class (such as the style of planning, teaching-learning process, measuring and assessing patterns, teaching belief and philosophy, and style of imparting professional knowledge) determines the teaching style of the candidate teacher.

According to Kaplan and Kies (1995), “teaching style” refers to “a teacher’s personal behaviours and media are merely used to transmit data or receive it from the learner”. Hein et al. (2012) definition of teaching styles is based on behaviours simulated by teacher–student interaction and may differ among teaching situations since teachers use several teaching styles to meet instructional and assessment objectives. Bibace et al. (1981) see teaching styles in “a continuum where the most student-centred (facilitative) styles lie at one end, and the most teacher-centred style (assertive) lies at the other end”. Hoyt and Lee’s (2002) research shows that there is no one teaching style effective for all objectives and disciplines. Teachers have a dominant or preferred teaching style in which they will often mix elements of other styles. According to Grasha (2002), almost all teachers possess a blend of all five teaching styles.

The expert teacher style has the traditional teacher

features, gives importance to transmitting knowledge, and determines the content, materials and timing. Continuous usage of this teaching style will negatively affect the students’ questioning ability. The formal authority teacher style has the traditional teacher features, is not flexible, and the classroom routines are essential. Students are not provided with opportunities for creative and versatile thinking. The teacher has a specific status among the students.

The personal model teacher style acts as a model instead of dictating how students should think. It encourages the students to observe, teaches by example and works together to lead the learner. The facilitator teacher style is flexible in interactions with the students, presents choices, and leads the way. It allows the students to take responsibility, creates cooperative learning occasions, and acts as an active listener. The delegator teacher style creates a student-centred teaching environment, struggles to develop student potential, and contributes to the students’ perception of themselves as independent learners; it gives the students duties and responsibilities. However, it has been proved in studies that teachers prefer more than one style while teaching.

Grasha (1994) examined how the five styles were distributed among various academic disciplines. He reported that those teaching in the arts/music/theatre disciplines use the personal model style more often than other disciplines. Research showed that Turkish music teachers preferred the expert/facilitative/personal/model teaching styles compare to other teaching styles (Demir, 2015). In the group of expert/facilitative/personal model teaching styles “teachers are in the role of designing opportunities for learning that emphasize collaborative and self-directed experiences” (Grasha, 1994). This style also requires supervision of students, and teachers play a central role in designing activities. Teachers must develop good interpersonal relationships with students and teach them how to work closely together. Students must be willing to take the initiative and accept responsibilities. The least preferred teaching styles among Turkish music teachers were the expert/facilitative/delegative teaching styles. Grasha (2002) stated that teachers with expert/facilitative/ delegative teaching styles create a more effective teaching environment because they enable the students to form their own learning achievements but teachers must be willing to give up some control over tasks.

A review of effective teaching and teaching styles shows that there are more differences in music teaching than a positive and clear teaching approach. Gumm (1993) revealed the lack of previous research about patterns of music teaching behaviours, and developed the Music Teaching Style Inventory to detect a diversity of music teaching styles, using a nationwide sample of choral music teachers. One hundred thirty four distinctive teaching behaviours were identified and, through factor

analysis, eight factors were confirmed and designated as dimensions of music teaching styles. Of these eight factors, four are classified as teacher-directed and four as student-directed. The four teacher-directed styles are assertive teaching, nonverbal motivation, time efficiency, and positive learning environment. The four student-directed styles are group dynamics, music concept learning, artistic music performance and student independence.

Gumm (2004) expanded his research to explore music teaching styles as perceived by students. Classroom interaction between teacher and students included in the areas of objective observations, teacher self-perception and student perception. Gumm pointed out that “students are daily participants in the music class and therefore would have a better grasp of the tone of the classroom”. The observer perception of classroom interaction was studied by Duke et al. (1998) and Henninger (2002). Blumberg (1980) stated that “how a person perceives the behaviour of another is much more important than the behaviour itself” (Crasborn et al., 2011).

From this perspective, the effectiveness of the mentor teacher’s behaviour can be determined by the candidate teacher’s perception. Candidate teachers enter the school with teaching knowledge gained through method courses and from their own experiences of being a learner. Such knowledge and their own experiences of school life enable candidate teachers to form their teaching styles before entering teaching practice.

Hence, the candidate teachers’ observations of their mentors’ lessons enable us to understand mentors’ teaching style through candidate perceptions. In particular, the research question would be “what correlation is there between candidate teachers’ perception of their mentor teachers’ teaching style and their preference of teaching style”. In this context, the research tries to answer the following questions:

1. Is there a correlation between the candidate music teachers’ teaching style preference and the mentor teachers’ perceived teaching styles?
2. Do the perceived teaching styles of the mentor teachers have a meaningful and determining effect on the teaching style preferences of the candidate music teachers?

METHODOLOGY

The correlative investigation model, one of the most commonly applied models in the related literature, was used in the research (McMillan and Schumacher, 2006; Cohen et al., 2003; Sönmez and Alacapınar, 2011).

This model is used to determine the correlation between different variables in educational and social research (Fraenkel and Wallen, 2000; Beyhan, 2013) and aims to identify the existence or level of coordinated change between two or more variables (McMillan and Schumacher, 2006).

Participants

The subjects of the study were 218 candidate music teachers in their final year of pre-service music teacher education in the academic year 2015 to 2016. The sample was randomly drawn from the education faculties of fine arts music education departments of seven state universities in Turkey (Necmettin Erbakan University, Uludag University, Niğde University, Dokuz Eylül University, Van Yüzüncü Yıl University, Karadeniz Teknik University and Muğla Sıtkı Koçman University). Candidate music teachers filled out the Teaching Style inventory during their school practices. Five out of 218 questionnaires were not included as they were filled out improperly so the research dataset consisted of 213 students’ responses.

Data collection instrument

The teaching style inventory developed by Grasha (1996) and later translated and adapted to Turkish language by Üredi (2006) was used to understand the music candidate teachers’ own teaching style preferences and mentor teachers’ perceived teaching styles. Validity and reliability studies were conducted on 100 Turkish teachers. The inventory consisted of 40 items. There were five sub-dimensions with eight items each; expert teacher (1,6,11,16,21,26,31,36), authority teacher (2,7,12,17,22,27,32,37), personal model teacher (3,8,13,18,23,28,33,38), facilitator teacher (4,9,14,19,24,29,34,39), and representative teacher styles (5,10,15,20,25,30,35,40). Subjects were asked to rate their teaching styles on a five-point scale.

The Cronbach alpha value for the expert teacher style is 0.75, authority teacher style 0.76, personal model teacher style 0.83, facilitator teacher style 0.87, and representative teacher style 0.77. The internal consistency coefficient related to the entire teaching style scale is given as Cronbach alpha (0.9098), Spearman-Brown (.8770), and Guttman (.8755). The fact that the coefficient is high and meaningful at the 0.1 level shows that the internal consistency of the scale is high.

A personal information form was used to collect data and describe the sample about independent variables of the inventory. There were four questions about candidate teachers’ gender, high school they graduated from, current university, and the total number of students in classrooms at their practice school.

Analysis of the data

The dataset has been analyzed to identify the correlation between the teaching styles of mentor and candidate teachers. The Pearson moment’s correlation (simple linear correlation) has been computed.

Linear regression analysis (simple linear regression) was used to predict whether the teaching styles of the music teachers have a meaningful and determining effect on the creation of the candidate teachers’ own teaching styles.

FINDINGS

The relation between the candidate teachers’ teaching style preference and the mentor teachers’ perceived teaching styles

The first aim of the study was “to find the association

Table 1. Correlation matrix of mentor teaching style for candidate preferred style.

Variable		Candidate style	Teacher style
Candidate preference	Pearson correlation	1	0.875**
	Sig. (2-tailed)	-	0.000
	N	213	213
Mentor style	Pearson correlation	0.875**	1
	Sig. (2-tailed)	0.000	-
	N	213	213

** Correlation is significant at the 0.01 level (2-tailed).

Table 2. Model summary.

Model	R	R square	Adjusted R square	Std. Error of the estimate
1	0.875 ^a	0.766	0.765	0.23843

between the candidate teacher's teaching style preference, and their perceptions about the teaching styles of the mentor whose lessons they observed". Thus, the correlation statistics data comparing the candidate teacher's teaching styles and their perceptions has been examined. Table 1 gives correlation values found according to the preferences and perceptions of fourth-year candidate teachers in the education faculty of a fine arts music department. The linear correlation process was performed to emphasize whether there is an association between the mentor teachers' perceived and candidate teachers' preferred teaching styles. Table 1 provides a positive and meaningful correlation between the candidate and mentor teachers' teaching styles ($r = 0.875$, $p < 0.00$).

The mentor teacher's role in the candidate music teacher's teaching styles preference

The second purpose of the study is to find out, "Do the perceived teaching styles of the mentor teacher have a meaningful and determining effect on the candidate teachers' preferences?" The values obtained from the results of the linear regression analysis (simple linear regression) used to answer this sub-problem are presented in Table 2 as a model summary.

A linear regression analysis was carried out to disclose how the mentor teacher's teaching styles predicted that of the candidate teacher. The mentor teacher's teaching styles were observed to have a purposeful role in determining students' own teaching styles ($R = 0.875$, $R^2 = 0.766$). Table 3 shows that the perceived teaching styles of the mentor teacher were significant predictors of the candidates' preferred teaching styles ($F(1.211) =$

692.606 , $p < 0.05$). The mentor teachers' teaching styles express 76% of the point change in the candidates' preferred teaching style preferences. The main predictor of the regression equation is the coefficient variable ($B = 1.767$), and the suggestiveness test is the expressive predictor of the candidate teachers' preferred teaching styles ($p < 0.05$). According to the results of the regression analysis, the regression equation predicting the students' preferred teaching styles is as follows:

$$\text{ÖcKÖSP} = (1,767 \times \text{ÖtUÖSP}) + 1,115$$

ÖcKÖSP= point for candidate music teachers' preferred teaching style

ÖtUÖSP= point for mentor teachers' perceived teaching style

DISCUSSION

The education faculty in the fine arts music education department of state universities in Turkey offer a 4-year music teaching degree program. Kalyoncu (2005) identified four proficiency areas—music domain knowledge, musical performance, method courses, and practical teaching experiences—that music students are required to excel at to teach music at schools.

In 1998, teacher education programs were revised to balance the theory and practice, which gave candidate teachers the opportunity to spend more time in classrooms observing and practice teaching. During the teaching practice period, mentor teachers' roles are important in the candidate teachers' professional development. Candidates have opportunities to observe mentor teachers' teaching practices, and later are given

Table 3. Mentor music teacher teaching style predicting candidate music teachers' teaching styles.

Variable	B	Std. error	β	t	Sig.
(Constant)	1.115	0.108	-	10.318	0.000
Mentor teacher teaching style	1.767	0.067	0.875	26.317	0.000

Note: $R = .875$, $R^2 = .766$, $F(1.211) = 692.606$, $p = .000$.

the responsibility to teach and explore how to apply theoretical and practical knowledge gained at their faculties.

Mentor teachers' responsibilities to the candidate teachers' guidance, and being a role model has already been mentioned (Schön, 1987; Braund, 2001; Hopper, 2001). It is believed that candidate teachers can shape their own teaching by observing mentors' teaching. The mentor teacher's behaviour in the classroom is a teaching model for the candidate teacher in aspects such as class management and organization, how to use materials, asking questions, assessments and evaluations, and interaction and communication with the children. Therefore, this study examined whether candidate and mentor teachers' teaching styles are correlated. It was assumed that similarities between teaching styles enabled more effective mentoring and led to dynamic communication and guidance between candidate and mentor during the teaching practice.

Thus, the results of this study showed that the candidate teacher's teaching style preference was associated with the mentor teacher's teaching style. Moreover, mentor teachers' perceived teaching styles happened to be a meaningful predictor of candidate teachers' own teaching styles. Mentor teachers' teaching behaviours, their teaching methods, communication skills, assessment and evaluation techniques, style of materials used, and classroom organization are believed to constitute a model for candidate teachers.

Many studies showed that the candidate teachers cannot receive sufficient guidance or establish effective communication links and some evidence showed that mentor teachers ignored most of the information taught at the faculties (Shantz, 1995; Kiraz, 2002; Kiraz, 2003; Özbek ve Aytekin, 2003; Uçar, 2012; Walkington, 2007; Hobson 2002). Smith (1994) and Benson (2008) claimed that mentoring was not beneficial for new music teachers compared to new teachers of other subjects. This study hypothesizes that since mentors' and candidate teachers' teaching styles are related, they should approve of and agree with the other's teaching style. Consequently, mentoring would be more effective, as there is no conflict of teaching styles. However, mentoring of candidate music teachers still needs attention. Selection of mentors, in particular, needs consideration as candidates pointed out the importance of mentor teachers' teaching styles, "Select associate teachers that implement the teaching

styles discussed at the faculty..."

This study also attempted to understand mentor teachers' teaching style through the observational perceptions of candidate teachers. Blumberg (1980) and Gumms (2004) believe that perception of others' behaviour is more important than the behaviour itself. Candidate teachers were participants of the music classes every day, therefore, they had a better understanding of the classroom's tone. Demir (2015) carried out research about music teachers' teaching styles by asking them about their own teaching styles; however, these results were dependent on candidate teachers' perceptions to evaluate mentors' teaching style.

Perception of the mentors' responsibilities is often considered a master-apprentice relationship in the literature. Kiraz (2003) suggested that the mentor teacher should not impose his/her own teaching styles on the candidate teacher. Although research results found a correlation between two groups of teachers, it was limited to claiming that mentors had imposed their teaching styles on the candidate teachers. Therefore, it is necessary to refer to the candidate teachers once more after their teaching practice. This research was carried out before their actual teaching practice, and most candidates were still observing their mentor teachers in the classrooms. Özdemir and Çanakçı (2005) pointed out that the candidate teacher's opinions and teaching style preferences may change after the teaching practice.

CONCLUSION

For candidate teachers, school experiences are an opportunity to watch mentor teachers, who are more experienced in teaching musical and theoretical skills in classroom environments, teaching. During this period, candidate teachers are expected to reach a synthesis between being able to teach music sufficiently in the future and evaluating the mentor teacher's teaching style to find out his/her own teaching style. How a candidate wants to see himself/herself as a music teacher starts from the moment of teaching practice.

With this research, it can be concluded that candidate teachers' own teaching style preference is associated with the mentor's teaching style. The mentor teacher's teaching style is a meaningful predictor of the candidate teacher's preferred teaching style. The selection of a

mentor by a faculty lecturer is an important responsibility. The mentor's teaching style matching the candidate teacher's preferred teaching style may indicate effective collaboration and mentoring. Mentors' teaching styles and those of candidate teachers should be re-evaluated after teaching practice.

SUGGESTIONS

Therefore, according to the research results it can be suggested that:

1. As the mentor teachers' teaching styles predict the candidate teachers' teaching styles, it is vital for mentor teachers to be informed about the research results at school.
2. The lecturer at the faculty responsible from mentors must be careful and selective when appointing the mentor teacher in terms of their teaching styles and being an effective role model for the candidate teachers.
3. Observation and interview techniques are needed to collect data from music mentors about mentor practices at schools.
4. The Music Teaching Style Inventory developed by Gumm (1993) needs to be translated into Turkish and culturally and educationally adapted to measure Turkish music teachers' teaching styles.

Conflict of interests

The author has not declared any conflict of interests.

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Full Length Research Paper

Assessing the desired and actual levels of teachers' participation in decision-making in secondary schools of Ethiopia

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This study was conducted to assess the desired and actual levels of teachers' participation in decision-making process in Ethiopian secondary schools. For this, the study employed a cross-sectional survey design collecting data from sampled secondary school teachers (n = 258) found in Assosa Zone, Benishangul Gumuz Regional state, Ethiopia. Stratified sampling method was applied to select participants from eleven randomly selected secondary schools located in the seven districts and one town administration of Assosa Zone. The data were collected from sampled teachers using a standardized self-administered questionnaire and analyzed using mean, standard deviation and t-test. The findings of the study indicated the presence of significant differences between teachers' desired and actual levels of participation in decision-making in their respective schools. This means that the teachers' participants reported more desire to involve than they actually did so in decision-making process. The researchers therefore, concluded that the decision-making process in the studied schools did not seem participatory and the efforts made by school management to empower teachers were not satisfactory. To cope with these challenges, the researchers recommended the need to conduct further study in order to scrutinize the major reasons for the low participation of teachers in decision-making. This would enable schools to devise effective strategies in order to enhance educational experience of students through improving teachers' levels of participation in decision-making.

Key words: Decision-making, teacher participation, Ethiopia.

INTRODUCTION

The success and failure of any school is largely dependent on the groups that makes it up, and effective utilization of the intellectual abilities of these group or human resources helps the development of such an

organization or schools (Olorunsola and Olayemi, 2011). Thus, decision making has been observed to be the heart of administrative process and leadership in schools.

In the school system, like in any other organization,

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decisions are made towards solving problems aimed at achieving the stated goals of the schools effectively and efficiently. These decisions may be related to students/staff discipline, curriculum implementation, resource utilization, school policy or extra-curricular activities. Good schools depend on administrators recognizing that teachers are capable of being responsible for their students' learning. Such schools also empower teachers with the ability to make the decisions on how to best accomplish success (Raudonis, 2011). This entails that school leaders should involve teachers in the decision-making processes as they are the ones closest to student achievement (Lashway, 2003).

The United Nations Education, Science and cultural Organization (UNESCO) document asserts that without the participation of teachers, changes in education are impossible (UNESCO, 2005). This preposition confirms that teachers are the corner-stone of school activities. Moreover, it can be said that the quality of school performance largely depends upon teachers who occupy the most important place in the teaching learning process. Therefore, the involvement of teachers in decision-making is likely to motivate them to exert their mental and emotional energy in a group situation that may contribute to group goals and shared responsibilities.

Teachers play crucial role in the teaching learning process. They are the guardians of instruction, implementers of school policies and co-organizers of school activities. Thus, the decisions made in schools directly or indirectly affect teachers. This implies that "teachers are suited to make better decisions having in mind what is required of them as professionals" (Mualuko et al., 2009).

Teachers can take a larger role in the overall success of the school when they become committed to active participate in the decision-making process. A number of researchers have studied the relationships of teachers' increased involvement in decision-making with a number of important school variables. In relation to this, Smylie (1996) stated that participation improves teachers opportunities in acquiring new knowledge and insights.

One of the reasons for involving teachers in decision-making is that it improves the overall performance of the school. Involving teachers in decision-making process is a means to increase the productivity and efficiency of an educational organization. Pashiards (1994) in this regard, explained that increasing the level of teacher participation in decision-making process makes school policy and management more responsive to societal needs.

Participation in decision-making can also make teachers feel a sense of ownership to the decision and belongingness to their institutions. In this regards, Kumar and Scuderi (2000) asserted that participation enables teachers to become active participants in school management process. As a result, teachers will have a wider and greater ownership of the school, its vision and

priorities and motivated to carry out their task. Another benefit of participating teachers in decision-making is that it promotes the culture of democracy in the school. Imber and Duke (1984) argued that greater participation in school was in tune with democratic society, and this led to enhance commitment, improve performance and better productivity in the school.

The benefits of involving teachers in decision-making is not only limited to making them feel a sense of ownership about the consequences of the decision. Chinelo (2007) stated that teachers' adequate participation in decision-making in schools is not only crucial to accepting, accommodating, and implementing decisions, but also contributes a great deal to the maintenance of internal discipline in schools, positive attitude to school work, as well as improving the quality of future decisions. The involvement might further promote teachers' commitment to these school policies and increase their motivation to implement as well (Smylie and Tuermer, 1992).

In sum, the participation of teachers in decision-making pertinent to any aspect of school operation has a positive impact on school performance. School principals are therefore, expected to encourage teachers to actively participate in decision-making so that informed decision can be made at school level. This study therefore assessed the desired and actual levels of teachers' participation in decision-making in Ethiopian Secondary schools, particularly focusing on the desired and actual levels of teachers' participation in decision-making in the secondary schools at Assosa zone.

Statement of the problem

The meaningful participation of teachers in decision-making has a positive impact on the overall performance of schools (Blase and Kirby, 2000). Udoh and Akpa (2007) also assert that where teachers are adequately involved in decision-making process, there would be commitment and adequate support with the principal, and the realization of the school goal will be easy as apathy and opposition within the school are likely to be minimized. However, many questions have been raised as to the extent to which teachers can be involved in decision-making at school level (Wellington, 2012).

Furthermore, not all teachers would want to be involved in decision-making at school level. Some teachers may desire to be involve in decision-making while others may be less interested in it. However, there is a dearth of study that attempted to examine the desired and actual level of teachers' participation in decision-making and their determinants.

The purpose of this study therefore is to investigate the extent to which teachers desire to and actually participate in decision-making process. The study further attempts to answer the following research questions:

Table 1. Reliability analysis of the decision-making factors.

Decision domains	Number of Items	Reliability coefficient
Operation of the schools	10	0.84
Curriculum and instructional techniques	10	0.83
Teacher development issues	10	0.80
Student-teacher relationships	10	0.86

1. What are the desire and actual levels of teachers' participation in decision-making process in the secondary schools of Assosa zone?
2. Is there a significant difference between teachers desired and actual levels of participation in decision-making in the secondary schools of Assosa Zone?

Purpose of the study

The purpose of this study is to assess the desired and actual levels of teachers' participation in decision-making in the secondary schools of Assosa zone, Ethiopia.

METHODOLOGY

Research design

The present study employed a cross-sectional survey design. This design was found appropriate as it described teachers desired and actual levels of participation in decision-making.

Sampling

There are 17 secondary schools in Assosa zone. For this study, the researchers selected 11 schools using simple random sampling technique specifically a lottery method. Out of the total of 258 teachers in the 11 sampled secondary schools, 155 (60 %) were selected using proportional stratified sampling technique.

Instrumentation

The researchers adopted and used standardized questionnaire used by Lee (1999) to measure teachers desired and actual level of participation in decision-making (Lee,1999). The questionnaire consists of 40 decision-making statements that are grouped into four domains, namely:

1. The operation of the schools.
2. Curriculum and instructional techniques.
3. Teacher development.
4. Student-teacher relationships.

The researchers also tested the questionnaire in order to ensure its validity and reliability. Accordingly, the study distributed the questionnaire to 30 teachers, and found the questionnaire to be reliable. The questionnaire was dispatched to 155 teachers, and 152 (98%) teachers returned properly and completely filled

Table 2. Description of range of teachers' participation in decision-making.

Extent of participation	Mean
Low participation	≤ 2
Moderate participation	2 - 3.5
High participation	≥ 3.5

Source: Lee (1999).

questionnaire. The instrument was also checked for its reliability. Table 1 shows reliability coefficient of items in the four domains of decision-making. As shown in Table 2, the reliability coefficients for the different decision –making factors ranges between 0.80 to 0.86. These reliability coefficients are high score values indicating the high level of consistency of the factors.

Data analysis

The data collected from the sample population were systematically coded, tabulated and organized for analysis. The coded data were entered in to Statistical Package for the Social Science (SPSS) version 17 for analysis. Mean and standard deviation were used to describe the data. In addition, t-test was used to see if there is statistically significant difference between teachers actual and desired level of participation in decision-making. This study further adopted the following range used by Lee (1999) to analyze teachers desired and actual level of participation in decision-making (Table 3). The condition of participation is measured by the mean difference of the desired and actual participation of teachers. This study adopted 1 unit of the mean difference as significant value.

RESULTS

Demographic characteristics of the respondents

Descriptions of the demographic characteristics of the respondents have provided some basic information about the sample population involved in the study. The demographic characteristics of the study groups were examined in terms of sex, educational qualification and years of teaching experience.

As illustrated in Table 4, out of 152 respondents 13 (8.6.2%) and 21 (13.8%) were males and females respectively. The number of female respondents is very low compared to their male counterparts in the sampled

Table 3. Condition of teachers' participation in decision-making.

Condition of participation	Mean difference *
Deprivation	≥ 1
Equilibrium	-1-1
Saturation	≤ -1

*Mean difference; desired participation; actual participation (Source: Lee, 1999).

Table 4. Sex, academic qualification and years of service of respondent teachers.

Demographic variable		N	Percentage
Sex	Male	131	86.2
	Female	21	13.8
	Total	152	100
Qualification	Diploma	18	11.8
	Degree	117	77.0
	Master	17	11.2
	Total	152	100
Experience or service year	≤ 5 years	45	29.6
	6 - 10	49	32.2
	11 - 15	25	16.4
	16 - 20	21	13.8
	≥ 21	12	7.9
	Total	152	100

secondary schools. This is due to the underrepresentation of female teachers in the secondary schools of the study area. Similarly, as one can see in the same table, 117 (77%), 17 (11.2%) and 18 (11.8%) of teachers are Bachelor Degree, Master's Degree and Diploma holders, respectively. The guideline of the Ministry of Education has indicated that secondary school teachers should possess a minimum of first degree academic qualification (MoE, 1994). This indicates that existence of teachers in the secondary schools with level of education below the standard set by the MoE there are teachers below the standard in the targeted secondary schools.

Table 3 also shows that 45 (29.6%) and 49 (32.3%) of teachers have a served for 5 years and below, and 6 to 10 years respectively. On the other hand, only 12(7.9%) of the teachers had a service year of 21 and above. This might indicate that the respondents have reasonable length of teaching experiences that enables them to give adequate information on the practice of involving teachers in decision-making in the sampled schools.

As noticed from Table 4, teachers desire to participate in decision-making regarding school operation being high

(\bar{X} =4.41, SD 0.377) while their actual participation in decision-making on the same issue was low (\bar{X} =1.32, SD =.246). The mean difference between teachers desired and actual level of participation in decisions related to operation of schools was very high (\bar{X} =3.09). This shows that there is a significant difference between the desired and actual level of teachers' participation decisions related to school operation. This means that teachers desire more involvement in decision-making than they were actually involved in issues related to school operation.

The same table depicts that teachers have higher desire (\bar{X} =3.90, SD =.36) to participate in decision-making on matters related to curriculum and instruction while their actual level of participation was moderate (\bar{X} =3.19, SD =.39). The difference between the mean score of teachers desired and actual level of participation in matters related to curriculum and instruction is \bar{X} =0.71.

This implies that teachers were actually participating to the level they aspire to participate in decision-making on

Table 5. Comparisons of actual and desired level of teachers participation in decision-making.

Domains of participation in decision-making	Desired level of participation (DLP)		Actual level of participation (ALP)		Difference (DLP - ALP)
	\bar{X} ^a	SD ^b	\bar{X}	SD	\bar{X}
Operation of school	4.41	0.38	1.32	0.25	3.09*
Curriculum and Instruction	3.90	0.36	3.19	0.39	0.71
Teacher development issues	4.28	0.28	1.36	0.24	2.92*
Teachers–students relationships	4.19	0.30	1.84	0.34	2.35*

^aMean; ^bStandard deviation.

curriculum and instruction related issues.

Table 4 also depicts that teachers highly desired (\bar{X} =4.28, SD =.28) to participate in decision-making in issues related to their professional development while their actual level of participation on the same issue was low (\bar{X} =1.36, SD =.24). The difference between the mean score of the desired and actual level of participation of teachers in decision-making on issues pertinent to professional development is \bar{X} =2.92 which implies that they desire more involvement than they were actually involved in.

As noticed from the same table, teachers desire to participate in decision-making regarding student-teacher relationship was high (\bar{X} =4.19, SD =0.30) while their actual level of participation in decision-making on the same issue was low (\bar{X} =1.84, SD =.34). The difference between the mean score of the desired and actual level of participation in issues related to student-teacher relationship was \bar{X} =2.35. This shows that there is significant difference between actual and desired level of teachers' participation in the student-teacher relationship. Teachers desire more involvement than they were actually involved in the student-teacher relationship.

In sum, the result shows that teachers had a higher level of desire to participate in decision-making in all the four domains however, their actual level of participation is low except on matters related to curriculum and instruction. This shows that teachers were not provided with sufficient opportunity to actually participate in decision-making in the schools though they have higher desire to participate.

As noticed from Table 5, teachers desire to participate in decision-making regarding school operation was \bar{X} =4.41, SD 0.377 while their actual participation in decision-making on the same issue was \bar{X} =1.32, SD =.246. This difference between teachers desired and actual level of participation in issues related to school operation is statistically significant ($t(151) =16.5$, $P =.000$).

The same table depicts that teachers have higher desire (\bar{X} =3.90, SD =.36) to participate in decision-making on matters related to curriculum and instruction while their actual level of participation was moderate (\bar{X} =3.19, SD =.39). This difference is statistically significant ($t(151) =16.5$, $P =.000$). Table 6 also shows that teachers highly desired (\bar{X} =4.28, SD =.28) to participate in decision-making related to their professional development while their actual level of participation in decision-making on the same issue was low (\bar{X} =1.36, SD =.24). This difference is statistically significant ($t(151) =107.3$, $P =.000$).

As shown in Table 6, teachers reported a high desire to participate in decision-making regarding student-teacher relationship was high (\bar{X} =4.19, SD =0.30) while their actual participation in decision-making on the same issue was low (\bar{X} =1.84, SD =.34). The difference between teachers actual and desired level of participation in decision-making in matters related to teacher-student relationship is statistically significant ($t(151) =63.2$, $P =0.000$). Generally, the difference between teachers desired and actual level of participation in decision-making in the four domains is statistically significant.

DISCUSSION

One of the major findings of this study is that teachers' participants did report a low level of actual involvement in decision-making. In relation to this, several studies have come up with similar findings. Sorensen and Baum (1999), for instance, reported that even in schools that have well trained teachers in management, the head teachers and the overall school management boards usually find it more difficult to entrust the teachers with opportunities that will involve teachers in the direct management of school operations.

The present study finding is also congruent with the earlier study of Bush et al. (1980), who stated that the average intensity of teachers' participation ranges from

Table 6. A t-test on actual and desired level of teachers' participation in decision-making.

Domains	Desired		Actual		sig	t
	\bar{X}	S D	\bar{x}	S D		
Operation of school	4.44	0.356	1.32	0.246	0.000	88.2
Curriculum and Instruction	3.90	0.353	3.19	0.398	0.000	16.5
Teacher development issues	4.28	0.280	1.36	0.234	0.000	107.3
Teachers–students relationships	4.19	0.295	1.85	0.345	0.000	63.2

none participation to sometimes participating in decision-making related to administrative issues. Low participation of teachers in decision making may also result in teachers behaving as if they are strangers within the school environment and lose sense of commitment and dedication to the school (Ndu and Anogbo, 2007). Wolfson (1998) in the same way also asserted that boredom and frustration at work is often the result of teachers' lack of involvement in decision making.

The other finding of this study is that most teachers have a higher level of desire to participate in decision-making though this was not fully captured in actual practice in the studied schools. This implies that the actual state of teachers' participation in decision-making in the sampled school was deficient compared with the teachers participants' desire to involve in decision-making. This finding is in line with the finding of Rice and Schneider (1994) who found that deprivation state of teachers' participation in decision-making dominates the other states of decision-making, and concluded that teachers typically desire more involvement in decision-making in schools than their respective school administrators (management bodies) gave them.

Schneider (1984) in his study also found that teachers reported lower levels of actual involvement and higher levels of desired involvement in managerial issues, particularly in those pertaining to determining the administrative and organization structure of the school, determining the procedures to be used for teacher evaluation, selecting departmental chairpersons or team leaders, evaluating subject departments or teams, hiring new faculty members, setting and revising school goals, and establishing school wide policies. Chan (1997) study which was based on the response from 84 teachers over 45 decision issues showed that the actual involvement of teachers in decision making was less than they desired.

In recent years, an international trend has emerged towards decentralization, devolution and greater autonomy for schools within publicly funded systems of education with the goal of improving the quality of education (Beare, 1991; Beare and Boyd, 1993). In the same vein, the Education and Training Policy of Ethiopia asserts that Educational Management is decentralized (MOE, 1994). One of the key features of decentralized

education management is the greater involvement of stakeholders at the grass root level including teachers. Nevertheless, the finding of this study revealed low level of teachers' participation in decision making, and the existence of significance difference between the desired and actual level of teachers participation in decision making.

Such low involvement of teachers in decision making may negatively affect teachers' motivation, job satisfaction and commitment which in turn impede students learning

Conclusion

It was clear from the findings of this study that teachers' level of involvement in decision-making was low. This implies that decision-making process in the schools was centralized and decisions are made in the schools with a lesser amount of input from teachers. Furthermore, in the sampled schools, teachers desired more involvement in decision-making than they actually used to involve. This means that schools did not provide teachers with enough opportunity to participate in decision-making though they did desired most. This entails that the decision-making process in the studied schools was not participatory, and efforts made by school management to influence teachers' actual involvement in decision-making was not satisfactory.

RECOMMENDATION

The participation of teachers in decision-making process is crucial for the betterment of the school performance. Hence, the school management body should devise strategies by which teachers can participate more in the decision-making process. In order to devise such strategies, the researchers recommend further study to identify major reasons for low participation of teachers in decision-making process in schools.

Conflict of Interests

The authors have not declared any conflict of interests.

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Full Length Research Paper

Immortality of prejudice in striving Ubuntu: Case studies of community managed schools in Nepal

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The immortality of prejudice after the school management transfer has not been judged. This makes communities to take responsibility for schools further by compelling the government to mandate amendments of Community Managed Schools (CMS) Directives. The purpose was to explore the CMS enduring Ubuntu against immortality of prejudice, through participation and involvement. Three community schools were selected. Interviews were conducted with school professional community. Data triangulation was done for validation. The results suggest that management transfer of public schools was mainly initiated in deprived rural areas. Most government teachers are appointed to urban areas, while the community members were mostly farmers and street vendors. The uneven distribution of government teachers has resulted in inequality. The School Management Committees are given the authority to appoint teachers by the CMS Directives, but the Educational Act guards against this. Teachers were appointed by SMCs despite the fact that the Act does not allow this.

Key words: Prejudice in educational settings, Ubuntu, community schools, school management, inequality and injustice in education, community action, social values, social marginalization, social stigma, Nepal.

INTRODUCTION

“So Ubuntu — for us it means that the world is too small, our wisdom too limited, our time here too short, to waste any more of it in winning fleeting victories at other people’s expense. We have to now find a way to triumph together” Bill Clinton (2006).

Nepal is culturally diverse (UNESCO, 2011), but its economic inequalities have increased educational diversity by separating affluent families from the rest. This has been ongoing since the establishment of the first Nepalese school in 1853, which was meant for the

children born into affluent families. Children in the general public were not given access to education (Ministry of Education, MoE, 2003; Rajbhandari, 2011). This continued for many years but after the inception of democracy in 1951 access to education was granted, since education was being discouraged and prohibited (Wood, 1959, p. 429). The Nepalese Ministry of Education (MoE) (2012) states that around 113 million children still have no access to school and 60 percent of these children are girls. Subsequently, the prejudice in education emerged and has remained unequal until now. The persistent

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prejudice towards the community schools remains even after the transfer of public schools to communities which has not been addressed by the authorities; for example, autonomy is a pivotal issue and for this reason the appointment of teachers by School Management Committees (SMC) was also not clearly defined. This has agitated community members who are willing to take responsibility for schools, which has caused the government to mandate the amendment of Community Managed Schools (CMS) Directives several times. Although separate Directives are formulated for community schools, it conflicts and contradicts the Educational Act (CERID, 2004).

After the fall of the Rana regime ruling for 104 years (Amatya, 2004), communities were still taking it upon themselves to educate local children at temples, in Bihar or Ghumba popularly known as Pathsala. These initiatives were nationalized into a public school system (Rajbhandari, 2007). However, the government overlooked the development of these schools and has remained immune to infrastructure development, poorly managed classrooms, unqualified teachers, and the over enrolment of students (CERID, 2002). This resulted in teachers becoming political, leading to low pass rates and teachers' absenteeism (The World bank, 2003, 2001). Importantly, quality was not emphasized which also resulted in the emergence of private schools in Kathmandu. Over the time, private schools mushroomed, while public schools organized by the government already numbered 26 000 in the nation with 5.5 million students enrolled and approximately 150 000 teachers employed (MoE, 2003). The loss of faith in public schools encouraged most to send their children to private schools where paying high fees, in return for the quality of education was mandatory. This was the only way of obtaining access to functional school physical facilities, extracurricular activities, and modern teaching and learning methods.

Kafle et al. (2012) found that community schools in Nepal have a disturbing issue that led to poor and improper management of schools due to a variety of reasons. The major reasons being the politically related issues imposed on schools during the democratic elections of SMC chairpersons. Although SMCs were formed in some community schools, it was built upon relations which were not functional due to lack of knowledge in administrating educational settings. Some community school teachers reluctantly ignored the modern methods of teaching and learning. The SMCs also suffer from lack of financial resources.

CERID (2003) found that most schools attempt to escape the responsibility of school management. Even though Community Managed Schools manage the running of schools, they have not been able to convert into being fully independent schools. Nevertheless, most, if not all, community schools have been exercising

autonomy for planning, organizing, mobilizing resources and monitoring teachers. It was also found some schools proceeded to develop their own curriculum, which was the result of good cooperation and support from within the community and the SMC. Although provision for accountability is not explicitly mentioned in the current Act and Regulation, Community Managed Schools attempted to enhance accountability among themselves.

The World Bank (2014) found that government entities nominated as local bodies are less concerned with spending in rural areas, which means that the apportioning of expenditure to the educational sector is declining, particularly for community run schools. The major factor in this is, most boys are sent to private boarding schools whereas girls are sent to poorly managed community schools. In connection with this, most concerns for robust funding were concentrated on central schools where most students are enrolled. This resulted in the decline of enrolment of the number of children in community schools. This suggests that local bodies played some part in isolating the community schools from the required government support.

Striving towards Ubuntu, Vaillant (2005) states political obstacles can hinder the modern and efficient running of management in educational system. In connection to this, the community participation can play a pivotal role in respect to bringing educational reforms to school management and administrating educational change through decentralization by implying the delegation strategy (Rajbhandari, 2007). Supporting this view, Shields (1994) states that isolating community from school has been discredited, as in the next century the community participation has to be accompanied by building closer connection between the schools and these community members. In line with this, Naidoo (2005) in UNESCO document states that nature of participation and functioning of the school management can be highly influenced by the legal authorities given to the community such as, teachers, SMC members, parents and local community.

Furthermore, participation of external agencies such as, Non-Governmental Organizations (NGOs), International Non-Governmental Organization (INGOs), Community Based Organizations (CBOs) and Government Organizations (GOs) is needed to support these poorly community managed schools (Rajbhandari, 2007). In addition, contributing their knowledge, experience and expertise creates further Ubuntu in collaborating with educational reform within school settings.

Moreover, community schools could create Ubuntu among and between themselves by resolving situations through sharing commonly persisting problems that authorized governmental bodies have not acted upon. In addition, Rajbhandari (2007) argues that educational reform in developing countries is not a failing strategy, but rather most community managed schools are

frustrated by poor coordination from educational authorities. However, many community schools are enriching Ubuntu by creating home-school cooperation and collaborating with external agencies.

The purpose of this study was to explore the readiness of CMS for school management. Attention is given to Ubuntu enduring despite the immorality of prejudice affected by the government, which has resulted in locals collaborating among themselves in educating children through participation and involvement.

The following research questions explore and investigate community readiness and capacities using Ubuntu to eliminate prejudice in education on the part of the government by collaborating among themselves for development through effective school management:

1. What was the readiness of community for effective school management?
2. How were the community schools enhancing school management against the immortality of prejudice?
3. How was the SMC striving for Ubuntu to change and develop effective school management against the immortality of prejudice?

MATERIALS AND METHODS

Research design

This exploration is qualitative by nature and in design. Descriptive content analysis is used in the research design, which included case studies of community schools. The qualitative analysis enabled us to explore the school's cases. Prior appointment and consent were obtained from the schools and respondents to conduct interviews of their own volition and convenience.

Research participants and selection of community schools

Three community schools were selected from Lalitpur district in Kathmandu. These schools were operating as community schools during the time in which the interviews were conducted. The names of community schools and respondents are given in pseudonyms. The schools are referred to as follows: MK School, SH School and SB School to represent the respondents from these selected schools.

All three schools are located in different parts of Kathmandu valley. This initiative of selecting schools at different locations offered the researcher the opportunity to understand the monitoring and evaluation of schools by national educational authorities. Nevertheless, all three schools are autonomous schools and have similar difficulties in financing the schools with adequate required infrastructures to commence classes for their students.

Research tools and sample size

In each school, key respondents were invited to participate in the interviews. The respondents were schools leaders, head teachers, teachers, parents and community members. The respondents were both males and females. Altogether there were 16 participants who agreed to be interviewed. The average duration of the interviews was one hour. The interview with respondents was kept confidential

and was not shared with the other respondents. Schools were visited multiple times for interviews and this was tape recorded and later translated and transcribed for validation and reliability tests.

The brief descriptions of this research were presented to school staff, funding agencies and Non-governmental Organization (NGO), who were supporting the schools for the purpose of developing the buildings, classroom facilities and library equipment.

Data analysis procedures

Data were formed into coding to make meaning of the respondents' answers to the interview questions.

Interview data were cross-verified before drawing conclusions. Data from each school were also compared to explore the case study. The technique of data coding were conducted through understanding the interview by the short phrases indicated by the respondents, which consisted of give meaning of prejudice in education, inequalities and injustice in education and social values and social marginalization. Data coding was also constructed by giving meaning through single word. The data from three schools were compiled and described to give meaning to the meet the purpose of this study.

The coding was an efficient tool to interpret and to analyze the respondent's interviews. This coding was formed into different categories to represent the meaning that connects to the research questions from different interviewees. The coding also made the analysis efficient to view the different interviewee's answers and for seeking the meaningfulness of data.

Triangulation of the data was done for validating the respondent's evidence to arrive at making meaning of their input. Although all voices were tape recorded, data reduction was performed to display the data and construct meaning in the process of conducting the content analysis. Even though data were obtained from 16 participants, data reduction for data triangulation resulted in the reduction of repetition data displaying conclusions drawn to arrive at the purpose and problem statements.

RESULTS

Ubuntu! I am because you are! Bill Clinton (2006).

Discrimination in the educational sector has always created angst in the educational system of the country. The transfer of school management to the local community has resulted in the problem being addressed differently. It was believed that the local community can handle the school management more efficiently and effectively. However, in reality it has taken a different shape, although the rules and Act have the same implication for all community schools. It was found that community schools in Lalitpur are situated in different localities with different demographic and geographical conditions. In fact, nine community schools out of ten in Lalitpur are located in rural areas. Some areas are blessed with rich natural resources and some are blessed with rich local people, while others are not.

Immortality of prejudice

The discrimination, however, from the government is

inevitable. The less blessed areas should be given more emphasis by the government in terms of teachers appointed, financial grants and in technical guidance. The respective educational departments are overlooking the problems that still exist in some community schools where there are less educated people and the living standard of local people are poor, which, therefore, the locals cannot afford to contribute their ability despite their willingness to take over the school responsibility. The Principal of MK School states:

Most of the local people of that community are poor farmers. Some of them are laborers and drivers and very few have offices. There are no government employees.

Despite parents having shown their likeliness to accept the responsibility of self-managing the school, they still hesitate when interacting with the SMCs, as they feel inferior about their ability in terms of educational qualification; the principal further adds:

Despite being uneducated, SMC parents members attend meetings though they hardly speak or comment in meetings but we try to make them comfortable. They just suggest on school cleanliness but lack management practice.

The willingness of community to get involved in self-managing schools has nevertheless become a motivational factor for the locals. In addition to having the willingness, the ability to contribute financially is equally necessary. In connection with this, the parents and the locals of less blessed areas have nothing to offer except their professional expertise. With regards to this, the principal of MK School further states:

We need financial support to run school and for teachers' salary we need resources. The school cannot provide free education but we haven't talked with the parents for their financial contribution. If we let them know they may not show their interest as are showing it now.

The bias behavior of respective educational departments has created discrimination between community schools, by appointing uneven numbers of teachers in some community schools, for example, the SH School has five Government appointed teachers and SB School has six government appointed teachers, whereas less than two teachers are appointed in the MK School. In addition, Rajbhandari and Rajbhandari (2015) argue for school responsibility whether it is the school leaders who are based in the school or is it the educational leaders who hold the positions at the national educational department. Furthermore, they argue that every school and educational leadership is guided by their Psychological, Sociological and Physiological parameters that generate reciprocity of mirror effect from both leaderships and followership. This could be maintained by understanding

the school leadership environment by the governing educational department of the country.

The unequal distribution of government-recruited teachers seems to have left a sort of dissatisfaction in community schools. Nevertheless, the teachers are privately recruited from the local communities by the SMC where government teachers are fewer and salaries are being paid with the support rendered by the NGOs. The assistance of NGOs is inevitable in financial as well as in technical support. However, their support can never be kept aside from the school management as in some cases these outside agencies possess the prime duty of fulfilling the basic need of the school infrastructure development aside from government assistance.

The new concept of school handover to the community has never been favored by most; with such situation in hand, the school management committee is reluctantly depending upon NGOs. However, depending on NGOs would be beneficial for the school to administer the finances for some period of time. In contrast the NGOs, as social workers, do benefit the most from it, which is also overlooked by the international donors. The Principal of MK School supports this by saying:

We get advises from our donors (NGO organization) about the school activities but when the NGO does not appear then sometimes we do school meeting in our own. We however also have fears of the circumstances if the NGO do not support us financially. People also argue why they need to convert public school into community school and what are the achievements, how the community school handle the school management and what will be the situation if donor NGO organizations take out their hands from school. These are some frequently asked questions.

It is also understood that the government provides some financial assistance to the community schools. Despite being unable to raise funds from the local community for school development, community schools have to depend upon government sources for teachers' salary. These funds have never reached the community schools in full payment, because of the government bureaucracy. The chairperson of the SH School states,

Yes, we do receive administrative expenses from the government but the bureaucratic management of our country is very corrupted. The expenses we get from our government are not the actual sum we get. We get only half of the amount than actual amount and half it disappear and we cannot do anything about it. Now this has become the part of system.

Political interferences have never occurred in the community schools in selecting the chairperson as it used to be in the government school. Nevertheless, the conflict theory according to Karl Marx, the best jobs are maintained

by the high class, as stated by Ballantine and Spade (2004), "conflict theorists like Karl Marx and Max Weber question the contribution of unequal distribution of allocating job to the people of the society, the best position are maintained by the more powerful members of the society, whereas the low rank jobs are allocated to the less powerful groups often women, racial, and ethnic groups".

However, the results suggest that allocation of the higher rank position as chairperson has never been instigated by the minister or political parties lately after the transfer of management. The influences of such conflicts have never emerged in community schools because the chairperson is selected by the people within the community. However, the person seeking the position of chairperson may have vested interest in the prestigious position of being chairperson, with its associated social status. Nevertheless, political parties and the minister have never favored the selection of chairperson in community schools. In connection with this, the chairperson of SH School mentions:

When it used to be public school, chairperson was appointed through the recommendation of ministers. When the government change, chairperson changes accordingly but now political interference does not exist as the management is handover to the community.

Hence, with less interference from political parties the community schools have carved out a space of autonomy, which is also a factor of motivation for becoming self-determined to self-manage the school. However, if SMC of community schools efficiently concentrate on the development of schools and manages to bring about definite productive changes with collaborative partnerships, optimum utilization and mobilization of resources, hiring competent teachers that benefit the school and the community may lead to the successful of managing the school.

Without competent and able members in SMC, the management somehow may be biased upon the decision of partners, such as NGO, who are intellectually progressive and have the power to invest in the school at their discretion. In relation to this, the Head Teacher of the MK School mentions:

The donor NGO organization is very supportive and helps us in schools infrastructure development, but the situation might change as the person in that organization change. The school however manages to distribute stationary items through PTA but school is not capable of paying salary for the teachers. However, the NGOs are concentrating on income generating.

Another aspect of prejudice that may arise from the internal environment is if SMC does not perform the duty as efficiently and effectively as desired by the community

and the school staff. However, occurrence of negligence in school management may lead to the failure of self-managing schools, as was the case with public schools prior to the transfer. The SMC teacher of the SB School supports this by saying:

In previous days when the school was governed by the government, at that time the school's overall management was very poor. The school cannot be self-managed if such management still exists.

Teachers appointed by SMCs are paid low salary compared to DEO appointed teachers. DEO appointed teachers are paid wholesome amounts. Even though SMC appointed teachers are active and participative in any field of activity that school demands from them, they earn far less by comparison. The SMC local community member of the SH School states:

Government appointed teachers are receiving full salary where as teachers appointed through our own resources are paid less. This financial aid that we get is from nearby Private School. Even though they are paid less, they are more active than the former because they are from the local community.

The benefit of hiring teachers from the local community is that they are more competent in participating in school affairs, since they are all equipped with the existing environment of the local school and the children of the village. In relation to this, the SMC local community member of SH School further adds:

Private teachers are more dedicated to school maybe because they are from the same local community and they know the student personally. Talking about government hired teachers, as they do not belong to the same community and have to come school from far so that might be one reason of being less dedicated to the school. Other reasons might be because they don't like the type of environment here as they are used to bureaucratic environment.

Besides the internal prejudice, external pressure has its own impact on community schools. These groups include the teacher's union, rebellions (Maoist) and students unions, who have been asking the SMCs to close down the school and withdraw from the school management structures. They believe that the management, which was once handled by the government, has to be taken back from the community, since education is primarily concerned serving national interests, and should not be the interest of individuals or the community.

Striving Ubuntu through participations

However, the rebellious ones were actively discouraging

the transfer of management have somehow helped the SH School by supporting them with physical activities, such as constructing religious places, such as a bamboo hut for commencing Hindu religious puja organized by the school to generate some resources for educational purposes. However, student unions have never shown their support for the transfer of school management to the community. Their prime concern was to shut down the community school until it withdrew from the management process. In connection to this, the SMC teacher of the SB School states:

Right now we are given pressure by the teacher and student unions to shut down the school and withdraw from the management. They are saying that education and health are two prime sectors and it's the responsibility of nation to look after it. The government cannot get rid of it and give burden to the poor people and the community.

Although the transfer of school management has the positive effect on school improvement with community, parents and teacher involvement, the student union is threatening to disrupt the progress. They strongly believed that education should be of national interest.

DOE (2006, p.68) states "the main cause of the lower than expected implementation rate was the policy debate on programme implemented from the Nepal Communist Party (NCP) Maoist including its sister organizations (student, teachers etc.). This disruption of student union was only to those schools whose management was transferred". However, management transferred schools are taking challenging steps and have satisfied the local community groups, teachers, and parents. Supporting the progress community schools have made, the head teacher of the SB School states:

We are receiving positive response from the teachers. It is a good step that community took over the management. Teachers are satisfied and have shown no negative attitude towards the management.

Despite the progress in school management in such a short period of time, the prejudices and the antagonism of the student union still exist. This is happening because they are unaware of the real progressive picture of the community schools. However, the antagonizing behavior of the student union has forced the SMC to take a step back, despite their unwillingness to withdraw from taking over the responsibility of management. The head teacher further state:

We are threatened by the student union to close down the school and handover it to the government. They were criticizing us about the school being community and its management. We have sent notice to the district education office regarding this matter.

Regardless of disruptions from the student unions the community schools in the Lalitpur district have never withdrawn from the SMC model. However, the threat for student unions still engulfs school management committees, as they always believe that the government is shying away from taking responsibility for the burdens of education by handing over management schools to the community. In connection with the threat from student unions, the principal of the SH School states:

Currently the student union is asking us to withdraw from the community management because firstly, they think that government is trying to escape from its responsibility and secondly, the school will collapse if the community management could not run it properly.

As long as parents, teachers and locals participate in school management, community schools have nothing to fear, since the attitudes of parents, teachers and locals for facing difficult circumstances were never shown towards schools before the transfer. This has brought changes to schools such as, creating a sense of belongingness and ownership; collaborative behavior; participation in management; commitment of teachers and staff; and leadership quality. This was never encountered when the school was managed by the government. However, student unions forced community management to withdraw and hand the responsibility of management back to the government. Had the government schools been managed efficiently and effectively the transfer to the community would never have to be consigned.

It is the fact that powers dedicated to SMC in community schools are likely to be antagonized by teachers, because they fear that their incompetence would compel the SMCs, whereas in government schools this kind of practice is not done. However, student unions, have no problems with community schools; they are just backing up political parties to create agitation. Nevertheless, the pressures from student union for shutting down the community schools have come to halt with the new formation of government administration in the country. Disruption from students has not been encountered by the three community schools in Lalitpur, however, political agitation may create such a situation in the future (Personal communication Head teachers of SH School and MK school).

The threat, nevertheless, is a challenging obstacle to the SMC's of community school until the public schools themselves transfer the management to community school and the immorality of prejudice would never settle down until the political scenario is stable in the country.

DISCUSSION AND CONCLUSION

Discrimination in educational settings has remained

immortal in Nepal. It creates mayhem in the educational system both from the policy level and administration. The anomalies in Educational Act and CMS are still immoral (CERID, 2004, 2003). This generated difficulties in creating harmonious environment and implementing decision for the developmental aspect of community schools. Management transfer of public schools has mainly been initiated in rural and deprived areas where educated community members are almost nonexistence.

Although SMCs were encouraged to take responsibility and be accountable for community schools, the discrimination from the government is inevitable, in terms of allocation of subject teachers, fund allocations and infrastructural development. Most government teachers are appointed to urban areas where facilities are adequate at public schools.

The results suggest that the community members who are held responsible and accountable for school management are from deprived backgrounds. The financial injection to schools from these local communities is feeble. The uneven distribution of government teachers in community schools generates inequality between the Community Managed Schools (CMS). The result suggests that SMCs are given the autonomy to appoint teachers as per the CMS Directives but the Educational Act forbids this.

The findings suggest that teachers were appointed by SMCs despite the Act not allowing for this. The directives entail the SMC to appoint head masters, but it was found that none of the SMC's have depend on the government to supply adequate number of teachers where the salary of these teachers are paid directly by the government, the process lessening the burden placed on SMCs appointed teachers. The prejudice in range of salaries is immortal and the SMC appointed teacher's salary differs from the government appointed teachers. This has further encouraged the prejudice intact.

The findings suggest that most community schools are collaborating with the Non-Governmental Organizations (NGO's) for financial support. This encouraged the NGO to demonstrate leadership role especially on the decision making process. The chairperson and SMC members are elected by the school administration where best positions were maintained by the powerful groups (Kafle et al., 2012). However, low ranked positions are allocated to women, racial and ethnic group. This further is creating prejudice in the distributions of roles and ranks within the school settings.

In reducing the immorality of prejudice, the community schools created their own organizational environment settings within the school management authorities. This was done in cooperation with the SMCs, which created a feeling of Ubuntu. This was preceded with offering information to the local community on generating awareness of the educational importance given to deprived children.

Ubuntu was maintained reciprocally by offering their services to the schools, for example, the poor families working as a laborers offered their time to the school in constructing buildings for free. The other community locals offered free transportation of construction materials for school buildings. Some less affluent families in the community offered small donations and spread the network to the higher organization to participate in school development.

Nevertheless, exercising Ubuntu among School Management Committees (SMC) created the best opportunity to act upon school developmental activities by introducing English methods of teaching, developing local curriculum for local needs, collaborating with the external agencies for financial resources and also enrolling the students into the school.

Even though Ubuntu was one of the major components for the school progression, few of the issues related to power and position within the system still created a disruptive atmosphere within the school community. The one with the higher status in the local community desired for the higher position as they were being appointed as a member of the SMC. The lower positions were offered to females who considered them as a part of the school, but, also conducted cleaning of office space during and after the SMC meeting.

In conclusion, Ubuntu generated social harmony within the school environment. The school climate was based on the relationships. Some schools in this study also managed to become model community schools. Some schools followed the model school pattern. However, the donor agency were also attracted to involve with the school which was developed to offer financial help.

However, these donors showed less interest to support the schools deprived from geographical conditions and within the heritage areas. This continued the immorality of prejudice, although Ubuntu generated the social and cultural harmony.

Moreover, the community schools are now facing the double prejudice from the donor agencies and from the government. Hence, the readiness of community alone was insufficient to challenge academic management. Nevertheless, community participation and involvement in school management resulted in bringing about development in schools that had limited support from the government. Thus, it is just the way it goes entailing Ubuntu! We are because you are.

Conflict of Interests

The authors have not declared any conflicts of interest.

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Full Length Research Paper

A comparison of four differential Item functioning procedures in the presence of multidimensionality

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Differential item functioning (DIF), or item bias, is a relatively new concept. It has been one of the most controversial and the most studied subject in measurement theory. DIF occurs when people who have the same ability level but from different groups have a different probability of a correct response. According to Item Response Theory (IRT), DIF occurs when item characteristic curves (ICC) of two groups are not identical or do not have the same item parameters after rescaling. Also, DIF might occur when latent ability space is misspecified. When the groups have different multidimensional ability distributions and test items chosen to discriminate among these abilities, using unidimensional scoring, might flag items as DIF items. The purpose of this study was to compare four DIF procedures the Mantel Haenszel (MH), the Simultaneous Item Bias Test (SIBTEST), the IRT, the Logistic Regression (LR) when the underlying ability distribution is erroneously assumed to be homogenous. To illustrate the effect of assuming a homogenous ability distribution for the groups while they differ in terms of their underlying multidimensional ability levels on the DIF procedures, two different data sets were generated; one set in which DIF occurs, and one set in which no DIF occurs by using 2PL model. The UNIGEN program was used to generate the data. Each of the data sets contained 1000 examinees and 25 items. Item parameters were chosen to be capable of measuring a two dimensional ability distribution of the two groups. The MH, the SIBTEST, the AREA and the LR procedures were applied to the data both with DIF and without DIF. The study showed that all the four methods identified items as biased when the ability space was misspecified.

Key words: Item response theory, simultaneous item bias test (SIBTEST), differential item functioning, differential item functioning (DIF), Mantel Haenszel (MH), logistic regression (LR).

INTRODUCTION

Differential item functioning (DIF), or item bias, is a relatively new concept. It has been one of the most controversial and the most studied subject in measurement theory. DIF occurs when people who have

the same ability level but from different groups have a different probability of a correct response. According to Item Response Theory (IRT), DIF occurs when item characteristic curves (ICC) of two groups are not identical

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or do not have the same item parameters after rescaling (Hambleton and Swaminathan, 1985). DIF is categorized as uniform and non-uniform, according to interactions between group and ability levels. Non-uniform DIF occurs when there is an interaction between group membership and ability levels, whereas uniform DIF occurs when there is no interaction between the two. In uniform DIF, the ICC do not cross and one group is always superior to the other group, but in non-uniform DIF the ICC cross and both reference and focal groups might be superior to each other in different parts of the ability scale (Hambleton and Swaminathan, 1985; 1989). Also, DIF might occur when latent ability space is misspecified. When the groups have different multidimensional ability distributions and test items chosen to discriminate among these abilities, using unidimensional scoring, might flag items as DIF items (Ackerman, 1992). Stout et al. (2001) described the dimensionality as "...minimum number of dimensions of θ required to produce a locally independent and monotone latent variable model...When the dimensionality of a test is one, the latent variable model is called *unidimensional*, and when the dimensionality of a test is greater than one, the latent variable model is called *multidimensional*." (p. 359).

Practitioners sometimes incorrectly presume that test takers in their groups have the same underlying *unidimensional* distribution when it is a *multidimensional* distribution. When the numbers of examinees and items are large, this assumption cannot be satisfied. Researchers need to check unidimensionality in the data before adopting any of the DIF methods and they should use multidimensional models for parameter estimation in the violation of unidimensionality to understand the behavior of an item (Ackerman, 1992). Otherwise, several valid items may have been flagged as DIF items and can be wrongly eliminated from the test.

This paper compares four DIF procedures- the Mantel Haenszel (MH), the Simultaneous Item Bias Test (SIBTEST), the Item Response Theory (IRT), the Logistic Regression (LR) - when the latent ability space is misspecified and the multidimensional ability space is scored by using unidimensional scaling.

The MH, the SIBTEST and the Logistic Regression are non-parametric methods and the IRT is a parametric method. Herein, the four methods will be explained in some depth and their advantages and disadvantages will be identified.

Mantel Haenszel Method (MH)

When using the MH procedure, examinees are matched according to their observed correct score and then contingency tables are prepared for each test item. Table 1 shows a contingency table that contains the number of examinees in each group who correctly or incorrectly respond to an item (Clauser and Mazor, 1998). The null

Table 1. Contingency table.

Gorup	Score on studied item		
	1	0	Total
Reference	A _j	B _j	N _{rj}
Focal	C _j	D _j	N _{fj}
Total	N _{1,j}	N _{0,j}	N _{.j}

and alternate hypothesis given as,

$$H_0 = [\pi_{Rj} / (1 - \pi_{Rj})] = [\pi_{Fj} / (1 - \pi_{Fj})] j = 1, 2, \dots, k, \quad (1)$$

$$H_A = [\pi_{Rj} / (1 - \pi_{Rj})] = \alpha [\pi_{Fj} / (1 - \pi_{Fj})] j = 1, 2, \dots, k, \alpha \neq 1, \quad (2)$$

are tested against each other, where α does not equal 1 and π is the probability of a correct response. The odds (α) and weighted odds (α_{MH}) given as:

$$\alpha = \frac{C}{\frac{D}{A}} = \frac{CB}{AD}, \quad (3)$$

$$\alpha_{MH} = \frac{\sum A_j B_j / N_{..j}}{\sum B_j C_j / N_{..j}}. \quad (4)$$

are computed. The weighted odds ratio takes on values between 0 and infinity. A general guide for interpretation of a α_{MH} result might be: $\alpha_{MH} = 1.0$ indicating no DIF, $\alpha_{MH} > 1$ indicating the item favors the reference group and $\alpha_{MH} < 1$ indicating the item favors the focal group (Clauser and Mazor, 1998; Hambleton and Swaminathan, 1985; Millsap and Everson, 1993; Narayan and Swaminathan, 1996). Because the interpretation of these values is difficult, a logistic transformation is used.

$$\Delta_{MH} = -\frac{4}{1.7} \ln(\alpha_{MH}) = -2.35 \ln(\alpha_{MH}), \quad (5)$$

where Δ_{MH} takes values between negative infinity and positive infinity and can be interpreted as: $\Delta_{MH} > 0$ which indicates item favors the reference group and $\Delta_{MH} < 0$ indicates item favors the focal group (Millsap and Howard, 1993). The Mantel Haenszel procedure also provides a significance test. This test is given as

$$\chi^2_{MH} = \frac{[|\sum A_j - \sum E(A_j)| - .5]^2}{\sum Var(A_j)}, \quad (6)$$

where A_j corresponds to the number of examinees in the reference group responding correctly to J^{th} item,

$$E(A_j) = \frac{N_{Rj} N_{1,j}}{N_{..j}}, \quad (7)$$

$$Var(A_j) = \frac{N_{Rj} N_{Fj} N_{1,j} N_{0,j}}{(N_{..j})^2 (N_{..j} - 1)}, \quad (8)$$

and the ratio has a chi-square distribution with one degree of freedom. Chi-square statistics are affected by sample size; therefore, testing for both statistical significance and effect size might be useful to avoid detecting items with small practical significance erroneously, such as DIF items (Clauser and Mazor, 1998; Millsap and Everson, 1993). Although the MH procedure is one of the most utilized DIF methods due to its simplicity and practicality, it also has some major drawbacks. The MH procedures are successful in detecting uniform DIF but it might yield misleading results in nonuniform DIF or when using more complex models (DeMars, 2009; Güler ve Penfield, 2009; Millsap and Everson, 1993; Narayan and Swaminathan, 1996). Nowadays, a version of MH procedures for polytomous items and a software program called the Mantel Haenszel is available.

Simultaneous item bias test (SIBTEST)

The SIBTEST, generated by Shealy and Stout (1993), provides a DIF procedure that can do a set of DIF analyses at the same time. In SIBTEST, items suspected to be functioning differentially are called "suspected subsets" and remaining items are called "valid item subsets". The SIBTEST matches reference and focal group according to their estimated latent ability based upon the observed score on what the practitioner considers to be the valid items. First, examinee scores are calculated on a valid subset, and then the proportion of correct responses is calculated for suspected items. The SIBTEST works iteratively until all suspected items are removed from the valid subset. The final subsets of items that are DIF free are used as the matching criterion (Clauser and Mazor, 1998). The SIBTEST can detect both uniform and non-uniform DIF. The hypotheses for testing uniform and nonuniform DIF are

$$H_0: \beta_U = 0, \quad (9)$$

$$H_A: |\beta_U| > 0, \quad (10)$$

$$H_0: \beta_C = 0, \quad (11)$$

$$H_A: |\beta_C| > 0, \quad (12)$$

where β denotes the amount of DIF and a β value of zero indicates no DIF. Sometimes β values larger than zero, due to systematic differences between the groups require a regression correction. The regression correction is used to compute a true score for each examinee. This latent score is then used to match examinees. Uniform and non-uniform DIF hypotheses are tested simultaneously in order to control type I error. The total score for a valid subset and for a suspected subset, respectively, is given as:

$$X = \sum_{i=1}^n U_i, \quad (13)$$

$$Y = \sum_{i=N+1}^N U_i, \quad (14)$$

where U_i is one and zero for correct and incorrect answers, respectively. An estimation of β_U is

$$\hat{\beta}_U = \sum_{k=0}^n \hat{P}_k (\bar{Y}_{Rk} - \bar{Y}_{Fk}), \quad (15)$$

where \hat{P}_k denotes the proportion of focal group examinees who get a score of k on the valid subset

$$\hat{P}_k = \frac{(G_{Rk} + G_{Fk})}{\sum_{j=0}^n (G_{Rk} + G_{Fk})}. \quad (16)$$

The test statistic for testing uniform DIF (B_U) and standard error of beta $\hat{\sigma}(\hat{\beta}_U)$ are

$$B_U = \hat{\beta}_U / \hat{\sigma}(\hat{\beta}_U), \quad (17)$$

$$\hat{\sigma}(\hat{\beta}_U) = \left\{ \sum_{k=0}^n \hat{P}_k^2 \left[\frac{1}{G_{Rk}} \sigma^2(Y|k, R) + \frac{1}{G_{Fk}} \sigma^2(Y|k, F) \right] \right\}^{\frac{1}{2}}, \quad (18)$$

where $k = 0, \dots, n$. The estimator of β_c for non-uniform DIF and the test statistic are

$$\hat{\beta}_c = \sum_{k=0}^{k_0} \hat{P}_k (\bar{Y}_{fk} - \bar{Y}_{Rk}) + (\bar{Y}_{Rk} - \bar{Y}_{Fk}), \quad (19)$$

$$B_C = \hat{\beta}_c / \hat{\sigma}(\hat{\beta}_c) \quad (20)$$

(Narayan and Swaminathan, 1996). When there is no DIF, βu and βc are distributed as normal distributions with a mean of 0 mean and a variance of 1. The alternate hypothesis is accepted if the test statistic exceeds 100 (1- α) percentile (Narayan and Swaminathan, 1996). Positive β values indicate that an item is favoring the focal group. Also, the SIBTEST can be used for bundle DIF analysis.

Item response theory (IRT)

Although there is no single IRT method that can be used to detect DIF, all IRT procedures compare item characteristic curves (ICC) that are assumed to be invariant across groups after they have been rescaled. A general framework includes: (a) matching examines, (b) selecting an appropriate IRT model, (c) estimating item and examinee parameters for each group, (d) transforming estimates to a common scale, and (e) finding the DIF area by subtracting the reference and focal group's ICC from each other. Because item parameters are estimated separately for the focal and reference groups, they share different scales and cannot be compared directly. A common scale is needed. Scaling is possible on both item and ability parameters. Scaling is performed on the item difficulty parameter by constraining the mean and standard deviation to 0 and 1, respectively. This methodology is convenient for three unidimensional logistic models and the normal ogive model. This process puts estimates on a common scale; however, they are constrained separately. Scaling on ability parameters by constraining the mean and variance to 0 and 1, respectively, does not provide a common scale for comparison and an additional transformation is required. Discrimination and difficulty estimates can be transformed as follows:

$$\hat{b}_{lg} = k\hat{b}_{lg^*} = m, \tag{21}$$

$$\hat{a}_{lg} = \frac{\hat{a}_{lg^*}}{k}, \tag{22}$$

$$\text{where } \hat{k} = \frac{(\hat{\sigma}_2^2 - \hat{\sigma}_1^2) + \sqrt{(\hat{\sigma}_2^2 - \hat{\sigma}_1^2)^2 + 4\hat{\rho}_{12}\hat{\sigma}_1\hat{\sigma}_2}}{2\hat{\rho}_{12}\hat{\sigma}_1\hat{\sigma}_2}, \tag{23}$$

$$\text{and } \hat{m} = \bar{b}_2 - \hat{k}\bar{b}_1. \tag{24}$$

The pseudo guessing parameter is not transformed because it is invariant by scale (Crocker and Algina, 1986).

Among the various IRT procedures, the area method is perhaps the easiest and also provides a test of significance. Raju's (1990) procedure will be examined in

here as an example of the AREA method. According to Raju, the area between two ICCs can be found by subtracting the two ICCs from each other. Also, item mean and variance can be calculated for each item and later they can be used in hypothesis testing. Raju formulated mean and variance for both signed and unsigned areas for the one, two and three parameter logistic models. In this paper, only formulas for the one and the two parameter models are demonstrated (further detail can be obtained from Raju, 1990). The test statistic for signed area (SA) and unsigned area (US) when using one parameter models, respectively, are

$$SA_{10} = \hat{b}_2 - \hat{b}_1, \tag{25}$$

$$Ua_{11} = |\hat{b}_2 - \hat{b}_1|. \tag{26}$$

Also, the mean and variance for one parameter models are

$$\mu(SA_{10}) = E(\hat{b}_2) - E(\hat{b}_1) = b_2 - b_1, \tag{27}$$

$$\sigma^2(SA_{10}) = Var(\hat{b}_2) - Var(\hat{b}_1), \tag{28}$$

$$\text{where } Var(\hat{b}_i) = \left[\sum_{j=1}^{Ni} P_i(\theta_j) \mathcal{G}_i(\theta_j) \right]^{-1}. \tag{29}$$

The test statistic, mean and variance for the signed area for two-parameter models are

$$SA_{20} = \hat{b}_2 - \hat{b}_1. \tag{30}$$

$$\mu(SA_{20}) = E(\hat{b}_2) - E(\hat{b}_1) = b_2 - b_1, \tag{31}$$

$$\sigma^2(SA_{20}) = Var(\hat{b}_2 - \hat{b}_1) = Var(\hat{b}_2) - Var(\hat{b}_1), \tag{32}$$

$$\text{where } Var(\hat{b}_i) = \frac{I_{ai}}{I_{ai}I_{bi} - I_{aibi}}, \tag{33}$$

and item information (I) is

$$I_{ai} = D^2 \sum_{j=1}^{Ni} (\theta - b_i)^2 P_i(\theta_j) Q_i(\theta_j), \tag{34}$$

$$I_{bi} = D^2 a^2 \sum_{j=1}^{Ni} P_i(\theta_j) Q_i(\theta_j), \tag{35}$$

$$I_{aibi} = D^2 a_i (\theta_j - b_i) P_i(\theta_j) Q_i(\theta_j). \tag{36}$$

Assuming the difference between the reference and focal group ICC is normally distributed, a significance test for signed area is given by Raju in Equation 37. If the obtained test statistics is between $-z$ and $+z$, the null hypothesis is accepted and the item is considered DIF free. Because large samples tend to give more significant results, using small alpha values can protect erroneously detecting items as DIF.

$$Z = \frac{SA - 0}{\sigma(SA)}. \quad (37)$$

When the normality assumption is not tenable for unsigned areas (US), a different formula for US is given in Equation 38.

$$Z = \frac{H - 0}{\sigma(H)}, \quad (38)$$

A more simplistic approach without a significance test given by Linn et al. (1981) is as follows

$$A_{Li} = \sum_{\theta=-3}^{+3} |P_{i1}(\theta_k) - P_{i2}(\theta_k)| \Delta\theta, \quad (39)$$

where $\Delta\theta$ is at intervals of .005. Because the error of estimating ICCs differs at each ability level, weighting the ICC by its standard error can solve this problem. This is performed as follows:

$$A_{Li} = \sum_{\theta=-3}^{+3} \left\{ \left[\sum_{\theta=-3}^{+3} P_{i1}(\theta_k) - P_{i2}(\theta_k) \right]^2 \Delta\theta \right\}^{\frac{1}{2}}. \quad (40)$$

Interpretation of the value A is a little bit vague. Large A values indicate large bias, while small A values indicate small bias. Although IRT provides a general framework for DIF analyses, it has some major drawbacks. All IRT methods require a large sample size and this increases the number of parameters that have to be estimated. IRT procedures, unlike other methods, also require a considerable knowledge of IRT theory. Compared to other methods, IRT is less practical and much more complex (Crocker and Algina, 1986; Hambleton and Swaminathan, 1985).

Logistic regression (LR)

A logistic regression model detecting DIF items between the focal and the reference groups was introduced by Swaminathan and Rogers (1991). Although the logistic regression model is sensitive to both uniform DIF and non-uniform DIF, it has mainly been developed for

detecting non-uniform DIF. The standard LR model for predicting the probability of a dichotomous dependent variable is (Bock, 1975):

$$P(u = 1 | \theta) = \frac{e^{(\beta_0 + \beta_1 \theta)}}{1 + e^{(\beta_0 + \beta_1 \theta)}}, \quad (41)$$

Swaminathan and Rogers (1991) specified a LR model for DIF by creating separate equations for focal and reference group. This equation is as follows:

$$P(u_{ij} = 1 | \theta_{ij}) = \frac{e^{(\beta_{0j} + \beta_{1j} \theta_{pj})}}{1 + e^{(\beta_{0j} + \beta_{1j} \theta_{pj})}}, \quad (42)$$

where $P(u_{ij}=1)$ is the response of person p in group j , β_{0j} is the intercept parameter for group j , β_{1j} is the slope parameter for group j , and θ_{pj} is the ability of person p in group j . According to this model, an item is unbiased if intercept and slope terms are the same across the groups; that is, their logistic regression curves are exactly the same ($\beta_{01} = \beta_{02}$, $\beta_{11} = \beta_{12}$). On the other hand, an item is biased if logistic regression curves for the two groups are not exactly the same and differ across the groups. Uniform DIF occurs when logistic regression curves are parallel but not coincident. That is, when $\beta_{11} = \beta_{12}$ but $\beta_{01} \neq \beta_{02}$. Non-uniform DIF occurs when logistic regression curves cross each other. Because the model in Equation 42 does not capture the non-uniform DIF case, Swaminathan and Rogers (1991) reparameterized the LR model to capture uniform DIF and non-uniform DIF as

$$P(u_{ij} = 1 | \theta_{ij}) = \frac{e^{z_{pj}}}{1 + e^{z_{pj}}}, \quad (43)$$

$$\text{where } z_{pj} = T_0 + T_1 \theta_{pj} + T_2 g_j + T_3 (\theta_{pj} g_j), \quad (44)$$

$P(u_{ij} = 1)$ is the probability of a correct response for person p in group j , T_0 is the intercept, T_1 is the coefficient of ability, $T_2 (= \beta_{01} - \beta_{02})$ is the group difference, and $T_3 (= \beta_{11} - \beta_{12})$ is the interaction between groups and ability while g is the group membership variable. In this model, an item is identified as exhibiting uniform DIF item when $T_3 = 0$ but $T_2 \neq 0$, and an item is identified as nonuniform DIF item if $T_3 \neq 0$ (whether or not $T_2 = 0$). The parameters of the model can be estimated by using the maximum likelihood method. The likelihood function for any item are given as:

$$L(u_{pj} | \theta) = \prod_{p=1}^N \prod_{j=1}^n (P(u_{pj}))^{u_{pj}} [1 + P(u_{pj})^{-u_{pj}}] \quad (45)$$

where N is sample size, n is the test length, and $u_{pj}=1$, and $P(u_{pj})$ is the probability of a correct response for person p in group j as in Equation 43. Generally, the statistical significance of a coefficient is determined by using either likelihood ratio test or Wald statistic (Swaminathan and Roger, 1991). The Wald test is:

$$Z^2 = \frac{\hat{\beta}}{ASE}, \quad (46)$$

where Z^2 is the Wald statistic, $\hat{\beta}$ is the parameter estimate and ASE is the standard error of the estimate. Z^2 has a chi-square distribution with $df = 1$ (Agresti, 1990). The likelihood ratio test (G) compares the likelihood ratio of a full and reduced model. The full and reduced models for uniform DIF case are as follows:

$$Z_{Full} = T_0 + T_1\theta + T_2g, \quad = \quad (47)$$

$$Z_{Reduced} = T_0 + T_1\theta. \quad (48)$$

Also, the full and reduced models for a non-uniform DIF case might be given as:

$$Z_{Full} = T_0 + T_1\theta + T_2g + T_3\theta g, \quad (49)$$

$$Z_{Reduced} = T_0 + T_1\theta + T_2g. \quad (50)$$

Log likelihood ratios of these models can be calculated by using Equation 45. Then, the likelihood ratio test statistic is

$$G = -2(L_{Reduced} - L_{full}), \quad (51)$$

which has a chi-square distribution with two degrees of freedom (Whitmore and Schumacker, 1999).

The logistic regression procedure can be used with multiple examinee groups and with polytomous item scores (Agresti, 1990). Another advantage of using logistic regression is that estimates of the regression coefficients can be plotted. This plot can then be used to detect where along the scale the DIF is becoming problematic (Miller et al., 1993). The LR procedure might give clear perspective on the possible causes of DIF by inclusion of a curvilinear term and other relevant examinee characteristics such as text anxiety. LR procedures use total score as a proxy for latent trait and this feature might cause some problems when items have a multiparameter IRT model. The MH and the SIBTEST also share the same problem. IRT procedures have calibration methods but if the underlying trait is not unidimensional, calibration will not put the groups on the

same scale. In these conditions, practitioners should use caution when interpreting the results. If items are capable of measuring more than one ability, equal correct response number may not have the same meaning in the reference and the focal groups (Ackerman, 1992).

METHODS

To illustrate the effect of assuming a homogenous ability distribution for the groups while they differ in terms of their underlying multidimensional ability levels on the DIF procedures, two different data sets were generated, one set in which DIF occurs, and one set in which no DIF occurs by using the following 2PL model:

$$P(x = 1 | \theta, a_i, b_i) = \frac{e^{1.7ai(\theta - b_i)}}{1 + e^{1.7ai(\theta - b_i)}}. \quad (52)$$

The UNIGEN program was used to generate the data. Each of the data sets contained 1000 examinees and 25 items. Item parameters were chosen to be capable of measuring a two dimensional ability distribution of the two groups. Item parameters which are used to generate data can be found in Table 2.

Among the 25 items, the first ten were loaded on the first ability and the last ten items were loaded on the second ability. Items from 11-15 were loaded on both abilities and they indicated valid direction. The data for the no-DIF case were generated by using the same means and variances for both groups ($\mu_1 = 1, \mu_2 = 1, \sigma_1^2 = 1, \sigma_2^2 = 1$). For the DIF data set, means were different but variances were kept the same ($\mu_1 = 1, \mu_2 = 0, \sigma_1^2 = 1, \sigma_2^2 = 1$) so that the reference group was successful on the first ability level and the focal group was successful on the second ability level. Generation of data gave control over expectation of DIF items and no DIF items. Because item 11, 12, 13, 14, 15 were loaded on both ability levels they were expected to be detected as DIF items. Other items expected to favor either focal or reference group depending on its conditioning. In the no-DIF case, because both groups had the same underlying ability level and had the same item parameters, none of the items were expected to be detected as DIF item. Thus, all items were in valid direction.

The MH, the SIBTEST, the AREA and the LR procedures were applied to the data both with DIF and without DIF. The MH statistic was obtained by using the computer programs MANTEL and SIBTEST. The SIB statistic was obtained from the SIBTEST program. For the IRT statistic, estimates of item parameters were obtained separately for each group using the BILOG program. Because estimates were obtained independently, they did not share a common scale and the result had to be converted on a common scale in order to achieve possible comparison between the focal group and the reference group ICCs. The focal group's item estimates were rescaled onto the reference group's item estimates by using the RESCAL program. Then the areas between two groups' ICCs were obtained from the AREA program. A separate LR analysis was performed for each item by using the SAS program. The model included a dependent variable, dichotomous item response, and independent variables, total score, group and the interaction between group and total score.

RESULT

Four results from the DIF procedures, the MH, the

Table 2. Item Parameters Used to Generate 2PL Items for DIF Case and no DIF Case.

Item no	a1	a2	d	Item no	a1	a2	d
1	1.500	0.000	0	14	1.143	0.971	0
2	1.498	0.081	0	15	1.089	1.032	0
3	1.491	0.162	0	16	1.031	1.089	0
4	1.480	0.243	0	17	0.971	1.143	0
5	1.465	0.323	0	18	0.907	1.194	0
6	1.445	0.402	0	19	0.842	1.242	0
7	1.421	0.479	0	20	0.773	1.285	0
8	1.393	0.555	0	21	0.703	1.325	0
9	1.360	0.630	0	22	0.630	1.361	0
10	1.325	0.703	0	23	0.555	1.393	0
11	1.285	0.773	0	24	0.479	1.421	0
12	1.241	0.842	0	25	0.400	1.445	0
13	1.194	0.908	0				

SIBTEST, the item response (IRT), and the LR, were included. The number of items which flagged as DIF items in the DIF case for the MH, the SIBTEST, the AREA and the LR methods were, respectively, 22, 22, 20 and 19. The result for the SIBTEST and the MH were exactly the same, and they detected item 1-11 in favor of the focal group and item 15-25 in favor of the reference group (Tables 3 and 4 show the MH and the SIBTEST results for no DIF case and DIF case, respectively). The result for the AREA and LR were also similar (Tables 5 and 6 show the AREA and the LR results, respectively). The AREA method detected item 1-10 in favor of the reference group and item 16 - 25 in favor of the focal group. The LR method detected item 1- 9 in favor of the reference group and item 16 - 25 in favor of the focal group. In the no-DIF case, both the MH and the SIBTEST detected item 15 in favor of the focal group while the AREA method detected item 5 in favor of the reference group. The LR procedure did not flag any item.

DISCUSSION

Validation can be thought of as hypothesizing a certain construct as a potential source of plausible explanations of scores on a particular test. However, recognizing or foreseeing other constructs as potential sources of explanations of scores from the test and investigating the tenability of these alternative hypotheses are invaluable part of the validation process. Recently, DIF analysis shows up as a promising method for the validity investigation; to study construct relevant as well as irrelevant sources (Roussos and Stout, 1996; Walker and Beretvas, 2001). Although DIF studies have been undertaken since the early 1960s, still the underlying causes of DIF are not known (Messick, 1989; Walker and Beretvas, 2001). Given the apparent failure of cumulated DIF studies, researchers have emphasized the need to

become familiar with the underlying latent ability distribution of the test before performing any DIF analysis (Messick, 1989).

Ackerman (1992) and Sheally and Stout (1991) showed that if the groups are not homogenous in terms of their underlying ability distributions, so that they do not have the same multidimensional ability levels, and the items are capable of measuring these dimensions, using unidimensional scoring instead of multidimensional scoring, they may cause items to be flagged as biased items. Therefore, the purpose of this study was to demonstrate the effect of assuming uniform ability distribution for the groups while they differ in terms of their underlying multidimensional ability levels on the DIF methods. The result supported their view and all the four DIF procedures (MH, SIBTEST, AREA, and LR) flagged items as biased in the misspecification of latent space. Table 7 shows the percentage of items which were flagged as biased across the four procedures. Although all of the four methods detected misspecification of latent space as DIF, their results were not exactly the same. The MH and the SIBTEST flagged more items than the AREA and the LR did. It was interesting to see that even the underlying multidimensional distributions are the same for the groups. In the no-DIF case, some items have been detected as DIF items. With the exception of LR procedure, all methods flagged one item as biased. This study showed the LR procedure was the best among these methods in terms of false positives. The difference among the results might be attributed to the sensitivity of each method. Previous research showed that the MH method was the least sensitive for non-uniform DIF, while the SIBTEST, the AREA and the LR methods had the same sensitivity for nonuniform and uniform DIF (Clauser and Mazor, 1998; Erdem, 2014; Güler and Penfield, 2009; Gommez-Benito and Navas-Ara, 2000; Narayan and Swaminathan, 1996; Rogers and Swaminathan, 1992). Previous studies also showed that the IRT

Table 3. Summary of the MH and SIBTEST analysis results in no DIF case.

Item no	SIB test			Mantel Haenszel		
	Beta-uni	z-statistic	p-value	Chi sqr.	p-value	(D-DIF)
1	-0.02	-0.983	0.326	0.48	0.491	0.25
2	-0.031	-1.575	0.115	2.17	0.141	0.51
3	-0.015	-0.78	0.435	0.23	0.635	0.19
4	-0.005	-0.23	0.818	0.11	0.74	0.13
5	-0.02	-1.018	0.309	2.41	0.121	0.56
6	0.013	0.716	0.474	1.01	0.316	-0.39
7	0.002	0.107	0.914	0	0.95	-0.05
8	-0.003	-0.177	0.86	0.05	0.831	0.1
9	0.016	0.811	0.418	1.01	0.316	-0.37
10	0.013	0.68	0.496	0.19	0.663	-0.17
11	0.011	0.555	0.579	0.1	0.755	-0.14
12	0.01	0.558	0.577	0.47	0.495	-0.28
13	-0.003	-0.188	0.851	0.01	0.92	0.07
14	-0.023	-1.178	0.239	0.82	0.364	0.33
15	0.054	2.757	0.006	8.68	0.003	-1.06*
16	0.006	0.287	0.774	0.05	0.826	-0.1
17	0.008	0.399	0.69	0.01	0.943	-0.05
18	0.023	1.176	0.24	1.54	0.215	-0.44
19	-0.017	-0.837	0.402	0.28	0.594	0.2
20	-0.026	-1.232	0.218	1.4	0.237	0.4
21	0.017	0.786	0.432	0.75	0.387	-0.3
22	0	-0.003	0.997	0.08	0.78	0.11
23	0.035	1.582	0.114	1.36	0.244	-0.37
24	-0.039	-1.747	0.081	1.89	0.169	0.43
25	-0.016	-0.721	0.471	0.19	0.666	0.15

p<0.05.

Table 4. Summary of the MH and SIBTEST analysis results in DIF case.

Item no	SIB Test			Mantel Haenszel		
	Beta-uni	z-statistic	p-value	Chi sqr.	p-value	(D-DIF)
1	0.327	15.543	0	207.11	0	-4.26*
2	0.29	13.644	0	164.14	0	-3.85*
3	0.274	13.423	0	157.55	0	-4.06*
4	0.239	11.869	0	131.29	0	-3.71*
5	0.214	10.944	0	118.95	0	-3.57*
6	0.186	9.277	0	85.64	0	-3.05*
7	0.173	8.864	0	71.18	0	-2.81*
8	0.165	8.543	0	65.72	0	-2.69*
9	0.109	5.842	0	33.82	0	-1.99*
10	0.081	4.206	0	16.26	0	-1.38*
11	0.04	2.128	0.033	5.34	0.021	-0.82*
12	0.015	0.781	0.435	0.54	0.461	-0.27
13	-0.013	-0.702	0.483	0.74	0.388	0.32
14	-0.014	-0.761	0.447	0.48	0.489	0.26
15	-0.044	-2.345	0.019	4.4	0.036	0.74*
16	-0.093	-5.054	0	25.04	0	1.81*
17	-0.124	-6.549	0	42.07	0	2.24*

Table 4. Cont'd.

18	-0.146	-7.63	0	59.02	0	2.6*
19	-0.157	-8.217	0	65.25	0	2.73*
20	-0.184	-9.637	0	88.28	0	3.2*
21	-0.224	-11.534	0	116.92	0	3.66*
22	-0.268	-13.251	0	154.38	0	3.87*
23	-0.259	-13.22	0	150.5	0	4*
24	-0.27	-13.23	0	161.27	0	4.04*
25	-0.287	-14.024	0	173.9	0	4.06*

p<0.05.

Table 5. Summary of the IRT analysis results.

Item	DIF case		No DIF case		Item	DIF case		No DIF case	
	Area	p	Area	p		Area	p	Area	p
1	-1.1196	0.5664 *	0.0333	0.021	14	0.0715	0.0596	0.061	0.0379
2	-0.9963	0.5182 *	0.117	0.0596	15	0.1322	0.0836	-0.1412	0.0954
3	-0.8865	0.4864 *	0.0059	0.0423	16	0.3171	0.2151 *	-0.0108	0.0129
4	-0.783	0.4363 *	0.0316	0.0231	17	0.3886	0.2395 *	-0.0197	0.0221
5	-0.7206	0.4270 *	-0.018	0.1115 *	18	0.5254	0.3251 *	-0.0732	0.0569
6	-0.6049	0.3436 *	-0.0265	0.0387	19	0.5222	0.3189 *	0.059	0.0381
7	-0.5148	0.3025 *	0.0005	0.0104	20	0.6116	0.3682 *	0.1021	0.0924
8	-0.5227	0.3046 *	0.0005	0.0104	21	0.6967	0.4137 *	-0.0385	0.0371
9	-0.3477	0.2199 *	-0.0561	0.0347	22	0.8633	0.4675 *	0.02	0.021
10	-0.2227	0.1359 *	-0.0454	0.0357	23	0.8257	0.4727 *	-0.0721	0.0432
11	-0.1066	0.0684	0.0058	0.0223	24	0.9027	0.4905 *	0.1067	0.0795
12	-0.0497	0.031	-0.0134	0.0383	25	0.9961	0.5426 *	0.0449	0.0583
13	0.0717	0.0455	-0.016	0.0457					

Area> 0.1 taken as significant.

Table 6. Summary of the logistic regression analysis results.

Item	DIF case			No DIF case		
	Wald Test	p-value	Odd ratio	Wald test	p-value	Odd ratio
1	46.1458	0.0001	8.249 *	1.069	0.3012	0.756
2	50.9292	0.0001	9.917 *	0.7085	0.3999	0.797
3	37.8101	0.0001	8.924 *	0.2131	0.6443	1.143
4	29.5769	0.0001	6.585 *	0.6568	0.4177	1.266
5	45.7883	0.0001	14.344 *	0.06	0.8065	1.076
6	21.4559	0.0001	5.187 *	0.6701	0.413	0.767
7	10.8767	0.001	3.391 *	1.3738	0.2412	1.47
8	15.3452	0.0001	4.028 *	0.5863	0.4438	0.775
9	13.3733	0.0003	4.184 *	0.3725	0.5417	1.233
10	3.0295	0.0818	1.913	1.2103	0.2713	1.47
11	0.3849	0.535	1.268	0.3183	0.5727	0.799
12	0.7114	0.399	1.346	3.7334	0.0533	0.473
13	1.6127	0.2041	0.62	0.0535	0.8172	1.098
14	3.6286	0.0568	0.477	1.3913	0.2382	1.618
15	0.5936	0.441	0.752	0.3962	0.5291	0.776

Table 6. Cont'd.

16	13.6453	0.0002	0.209 *	3.5754	0.0586	2.357
17	10.5413	0.0012	0.285 *	1.8267	0.1765	1.749
18	31.7051	0.0001	0.113 *	1.7814	0.182	1.8
19	24.776	0.0001	0.144 *	0.7962	0.3722	1.484
20	28.3234	0.0001	0.136 *	0.0437	0.8345	0.911
21	28.765	0.0001	0.129 *	1.0642	0.3023	1.566
22	24.4447	0.0001	0.197 *	1.2465	0.2642	0.642
23	41.649	0.0001	0.090 *	1.5655	0.2109	1.709
24	35.9381	0.0001	0.135 *	2.1945	0.1385	0.536
25	58.4206	0.0001	0.066 *	0.1121	0.7377	1.155

p<0.05.

Table 7. Percent of item flagged as biased.

Type of DIF	DIF case				No DIF case			
	MH	SIB	AREA	LR	MH	SIB	AREA	LR
DIF cases	0.92	0.92	0.76	0.76	0.04	0.04	0.04	0.00
False positives	0.04	0.04	0.00	0.00	0.04	0.04	0.04	0.00

methods had the largest error rate.

When establishing a test, researchers sometimes wrongly assume that subjects in the groups have the same underlying unidimensional distribution even when it is a multidimensional distribution. This assumption is likely to be violated once the numbers of examinees and items are large. This study showed that practitioners need to be aware of multidimensionality in their data and if necessary they should use multidimensional models to estimate parameters before applying any of the DIF procedure to understand the behavior of an item (Ackerman, 1992). Otherwise, in the presence of multidimensionality several valid items may have been detected by DIF procedures and can be wrongly eliminated from the test. Test construction is a very time consuming and expensive task, and false positives are challenging.

Recently, Shealy and Stout (1993) developed a rigorous mathematical model for DIF (MMD; Shealy and Stout, 1993). This model explains the causes of DIF from the multidimensionality approach. Their DIF approach can be adopted to understand the underlying latent ability structure in the data and perform better DIF studies. This research was limited to examining the unidimensional DIF. Further studies might examine non-uniform DIF and other distributional features that might have lead to DIF.

Conflict of Interests

The authors have not declared any conflict of interests.

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Full Length Research Paper

Examining the effect of social values education program being applied to nursery school students upon acquiring social skillsⁱ

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This study was conducted in an attempt to develop Social Values Education Program aimed at nursery school students and examine the effect of Social Values Education Program upon the social skill acquisition of nursery school students. The effect of the education program that was developed within the scope of the study upon the social skill acquisition of nursery school students was examined via an experimental pattern with pretest-posttest control group. A total of 40 children (n=40) constituted the study group (20 children (n=20) in the experimental group and 20 children (n=20) in the control group). In the study, General Information Form that was developed by the researcher and Preschool Social Skill Evaluation Scale (PSSSES) were used as data collection tools. Shapiro-Wilks test was performed for determining the convenience of the study data for normal distribution, it was determined that the data did not show a normal distribution. In order to examine the effect of the education program upon the social skill acquisition of children; Mann-Whitney U Test was performed for making a comparison in independent groups and Wilcoxon Sign Test for making a comparison in dependent groups. The significance level was taken as 0.05. In order to determine the permanence of education; the permanence test of PSSSES was reapplied to children in the experimental group three weeks after completing the education program. As a result of obtaining the findings; it was determined that the Social Values Education Program was effective upon the social skill acquisition of children and this effect was permanent.

Key words: Preschool education, values, values education, social values, social skills.

INTRODUCTION

Value is a concept that is always desirable for human. The initial values learned from the family and after values earned from social institutions such as, school, peer group and society. The values gained in the pre-school years

will improve the academic success of children and will support social integration. Children when gained of social values, the values will effect all life of children. The peoples enriching society with have values. So, for a

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sustainable society values must teach to all children. Therefore must start to values education in early childhood.

Preschool period is where the social-emotional, physical, cognitive and language development of a child are very fast. In this period, the experiences of the child have an important effect upon her/his future social and academic life and personality, and they determine what kind of a person the child would become in the future. The studies show that a child's character considerably forms within the first five years after birth. Besides, childhood is known as a period where children develop an ability of observation, go into action with interest and desire, get socialized and dominate the future society better than adults (Yeşil and Aydın, 2007).

Preschool period is where the knowledge regarding values are founded for the first time in children. Family is the basic foundation conveying the social and cultural values, as well as social skills to children. While social skills and values are brought by parents in the first years of childhood; new skills and values are acquired by children depending on the increase in their interaction with the environment and the crowd around them in the later years. Even though children learn the knowledge regarding values lifelong; the first knowledge start to be obtained earlier. This process lasts for a lifetime. On the other hand, basic values start to be formed in this period (Balat and Dağal, 2006).

Value is a belief regarding the preferability or unpreferability of a certain behavior or something. Values, the good and desirable things, are the criteria that motivate and direct the human behaviors and affect the decision-making processes. Values are cognitive principles that direct and guide the preferences in human life (Cooper, 2014; Rokeach, 1973; Sagiv, 2002; Schaefer, 2012; Schwartz, 1994; Simon, Howe ve Kirschenbaum, 1978). Values do not emerge automatically; they are taught and learned from the moment a child is born (Long, 1999). Social values are defined by using concepts like socialization, social consciousness, norm and group spirit (Akbaş, 2004). Social values are defined as values that are generally agreed upon and are shared by a large part of society, and these values shape, define the society and affect its structure (Naylor and Diem, 1987).

Values education not only supports the responsibility, love and character education, but also comprises entrepreneurship, as well as acquiring basic human values, raising individuals who are at peace with themselves and others, creating an efficient school culture and protecting the social order (Aydın and Gürler, 2013). Educating students regarding values and ethics is an efficient step in forming a strong human character (Howard et al., 2004). It is required to mention the balance between the knowledge and values concerning the importance of values education. A person who gets equipped with knowledge grows to maturity with human,

ethical, social and cultural values (Aydın and Gürler, 2013). According to a number of studies, the values education has positive effects upon the academic achievement of students (Singh, 2011). Naylor and Diem (1987) suggest that the values education involves four approaches as the value infusion, value explanation, value analysis and ethical reasoning.

Unless there is a parallelism between the values being transferred by schools and the values that are experienced and accepted in society; individuals may deny their society (Akpınar, 2011). Being a community, school is an institution that has specific values and reflects them on individuals it serves. The concept of value is considered a major concept at schools. This major concept is followed by all concepts that make human beings human beings like virtue, character and morals (Akbaş, 2004). Teachers should build the process of value acquisition for children by combining it with social skills (Nucci et al., 2005).

Preschool period is where the first social skills are acquired and the first purposeful relationships are established. Social skills that are acquired in this period also form the basis of the skills to be acquired by individuals in the future. McFall (1982) defines social skills as certain behaviors to be displayed by individuals in order to fulfill the tasks/roles given by society. Social skills are behaviors that are shaped with social competence within the learned situations and conditions (Meadan and Monda, 2008). Social skills not only encourage children to establish and sustain positive social relationships with their peers, teachers and family, but also enable the peer acceptance and the social adaptation (Gresham et al., 2001). The acquisition of social skills, which enable children to be successful in the social environment, will only be possible through a planned program. The first five years of a child's life have a critical importance for forming early cognitive, social-emotional and organizational skills and competences that are required for a lifelong social adaptation (Sheridan et al., 2010).

Today, together with the increase of technological progresses, there has been an increase in the number of stimulus affecting the children either positively or negatively. Children are affected by the violence on earth, social problems and disrespectful attitudes of people toward one another a lot more now (El-Hassan and Kâhil, 2005). For them to a sustainable society, they must first acquire the necessary knowledge, skills, attitudes and values (UNESCO, 2014,). Reasons like the increase of broken families, failure of parents to spare sufficient and quality time for their children due to intense business life and the limitations of urban life have a negative effect upon children. Especially the decrease of communication and interaction between people negatively affects the development of social skills.

Traditionally, the main objective of preschool educational institutions is to provide an early socialization

of children and develop preparation for academic achievements. A quality preschool education program should contain academic skills, as well as objectives like character education, development of social and emotional skills and inclusion of social values (Greenberg et al., 2003). Mencious (1997) suggests that teachers need values in the preschool period. Children that adopt values at a young age develop a self-confidence, make their own decisions, solve their problems and consequently become happy. Value education that starts with taking someone as a model in family and imitating parents develops with knowledge and experience that are obtained from school and the environment. Thus, early childhood that leaves nonerasable traces in the personality structure of children is very important for their education (Yılmaz, 2010).

Examining the relevant literature, it is observed that preschool period plays a considerably determinant role in the process of acquiring social skills and values for children. Family is the first social environment for individuals, which is followed by other social environments like school and society. This hierarchical array is applicable for the process of acquiring values. Children primarily acquire the values of their parents and then the values of school and society. Preschool educational institutions are the first governmental institutions with rules in a child's life. Thus, providing social values education and social skills education for children at preschool educational institutions within the compass of a program will have positive effects upon children. From this point of view, the objective of this study is to develop Social Values Education Program aimed at nursery school students and examine the effect of Social Values Education Program upon the social skill acquisition of nursery school students.

METHODOLOGY

"A Random Pattern with Pretest-Posttest Control Group" was used in the study. The model with pretest-posttest control group involves two groups that are formed with impartial assignment. One of them is used as experimental group and the other as control group. Measurements of subjects in both groups regarding the dependent variable are received before the application. During the application process, on the other hand, the experimental process whose effect is tested is not applied to the control group while being applied to the experimental group. Finally, the measurements of subjects in groups regarding the dependent variable are repeated via the same assessment instrument (Büyükoztürk et al., 2012).

Study group

In order to form the study group, we primarily determined the schools to be included in the study group via the homogeneous sampling technic, which is a type of purposeful sampling method. Homogeneous sampling is where the sample is derived from a homogeneous subgroup or condition in the population regarding the study problem (Büyükoztürk et al., 2012). While determining the study group, we paid attention to children in the experimental and the control group to have similar socio-cultural features. Thus, two

primary schools that were located in the same neighborhood, provided binary education in the morning and at noon and were close to one another were determined as experimental and control group. In order to avoid an interaction between children and teachers that would be caused by the educational environment, the study groups were selected from different schools. Each nursery schools that were selected as experimental and control group involved totally 40 children ($n=40$) (20 in each). An attention was paid to children in the study group not to have received values education via a specifically prepared program before and not to need a special training. All the children that participated in study have normal development. Examining the distribution of children according to their gender in Table 1; it is observed that 40.00% of children in the experimental group are female and 60.00% male. It is also observed that 55.00% of children in the control group are female and 45.00% male.

Examining the distribution of children according to the number of siblings in Table 2; it is observed that 30.00% of children in the experimental group have no siblings, 35.00% one sibling, 5.00% two siblings and 30.00% three and more siblings. It is also observed that 10.00% of children in the control group have no siblings, 55.00% one sibling, 30.00% two siblings and 5.00% three and more siblings.

Table 3 shows the distribution of children in the experimental and the control group according to the state of having received preschool education before the study. It is observed that 75.00% of children in the experimental group had not received preschool education and 25.00% had received preschool education before. It is also observed that 90.00% of children in the control group had not received preschool education and 10.00% had received preschool education before. Table 4 shows findings regarding the educational background of the mothers of children in the experimental and the control group. It is observed that 35.00% of mothers of children in the experimental group are primary school graduates, 40.00% secondary school graduates and 25.00% high school graduates. It is also observed that 30.00% of mothers of children in the control group are primary school graduates, 50.00% secondary school graduates and 20.00% high school graduates.

Table 5 shows findings regarding the educational background of the fathers of children in the experimental and the control group. It is observed that 20.00% of fathers of children in the experimental group are primary school graduates, 20.00% secondary school graduates and 60.00% high school graduates. It is also observed that 20.00% of fathers of children in the control group are primary school graduates, 45.00% secondary school graduates and 35.00% high school graduates.

Data collection tools

In the study, "General Information Form" and "Preschool Social Skill Evaluation Scale (PSSSES)", which was aimed at determining the social skill levels of nursery school students, were used as data collection tools. General information form was developed by the researcher in an attempt to obtain information about the demographic features of children and their parents. General Information Form involves questions about children in the study group such as their gender, number of siblings, duration of attending a preschool educational institution and their parents' educational level.

PSSSES was developed within the scope of "Preschool Social Skill Support Project (PSSSP)" that was supported by TUBITAK in 2012 (Ömeroğlu et al., 2012). PSSSES aims to determine the competence of 36-72 months old children regarding social skills. The scores that are obtained from the scale reveal data aimed at determining the performance of children regarding social skills. PSSSES was organized in two separate forms that were aimed at teachers and parents of 36-72 months old children. Both forms

Table 1. Distribution of children in the experimental and the control group according to their gender.

Gender	Experimental group		Control group		Total	
	n	%	n	%	n	%
Female	8	40.00	11	55.00	19	47.50
Male	12	60.00	9	45.00	21	52.50
Total	20	100.00	20	100.00	40	100.00

Table 2. Distribution of children in the experimental and the control group according to the number of siblings.

Sibling Status	Experimental group		Control group		Total	
	n	%	n	%	n	%
No Siblings	6	30.00	2	10.00	8	20.00
One Sibling	7	35.00	11	55.00	18	45.00
Two Siblings	1	5.00	6	30.00	7	17.50
Three and More Siblings	6	30.00	1	5.00	7	17.50
Total	20	100.00	20	100.00	40	100.00

Table 3. Distribution of children in the experimental and the control group according to the state of having received preschool education before the study.

Preschool education receive	Experimental group		Control group		Total	
	n	%	n	%	n	%
Not Received Preschool Education	15	75.00	18	90.00	33	82.50
Received Preschool Education	5	25.00	2	10.00	7	17.50
Total	20	100.00	20	100.00	40	100.00

Table 4. Distribution of children in the experimental and the control group according to their mothers' educational background

Mother education status	Experimental group		Control group		Total	
	n	%	n	%	n	%
Primary Education	7	35.00	6	30.00	13	32.50
Secondary Education	8	40.00	10	50.00	18	45.00
Higher Education	5	25.00	4	20.00	9	22.50
Total	20	100.00	20	100.00	40	100.00

Table 5. Distribution of children in the experimental and the control group according to their fathers' educational background.

Father Education Status	Experimental group		Control group		Total	
	n	%	n	%	n	%
Primary Education	4	20.00	4	20.00	8	20.00
Secondary Education	4	20.00	9	45.00	13	32.50
Higher Education	12	60.00	7	35.00	19	47.50
Total	20	100.00	20	100.00	40	100.00

involve 49 social skill items aimed at the development levels of 36-72 months old children, as well as general/demographic information. Five-factor structure of the scale that was defined and supported by

expert opinion was examined via the confirmatory factor analysis (CFA). The alpha coefficients that were calculated for the teachers form of PSSSES were determined as 0.88 and 0.96 for the norm

sample of 3-year-olds; 0.90 and 0.97 for 4-year-olds; 0.88 and 0.96 for 5-year-olds and 0.90 and 0.96 for the entire norm sample. The relationships between the scores that were obtained from the teachers and parents form for children in the same norm sample were examined by calculating the Pearson correlation coefficient. Correlation value was calculated as 0.482 for onset skills, 0.454 for academic skills, 0.441 for friendship skills, 0.405 for emotional management skills and 0.495 for the total score.

PROCEDURE

Preparing the education program

Education program was prepared primarily by examining the value theories and determining the common "values" in these theories. In order to evaluate the convenience of the determined values for preschool children, opinions were received from five domain experts and 10 values (Love, Respect, Tolerance, Friendship, Helpfulness, Responsibility, Cooperation, Kindness, Self-Control, Honesty) were determined as values to be included in the education program according to the expert opinions. Behavioral indicators of these values were determined and the acquisitions and indicators of the education program started to be written. All the preschool education programs were primarily examined in terms of acquisitions and indicators regarding values and the convenient acquisitions and indicators were obtained from the preschool education programs. Other acquisitions and indicators were written by the researcher and presented to the expert opinion. 35 acquisitions and 113 indicators were determined as the acquisitions and indicators of the education program in line with face-to-face interviews that were conducted with five domain experts and education activities started to be written in line with these acquisitions and indicators.

Each activity plan contains the subtitles of acquisitions and indicators, materials, methods and technics to be used, concepts and words, preparation of the educational environment, learning process and evaluation process. Social Values Education Program was broached to five domain experts to be evaluated in terms of the aforementioned criteria; convenience of educational activities for acquisitions and indicators, materials and methods, concepts and words, preparation of the educational environment, learning process and evaluation, and the education program was finalized after receiving the feedbacks.

Applying the pretest

Before applying the PSSSES, the researcher participated in activities in the classes of children in the study group and spent time with them for the purpose of meeting them, communicating with them and learning their developmental features. Following an observation of one week aimed at meeting the children, the researcher started observing the children for filling the Preschool Social Skill Evaluation Scale.

Activity observations were realized separately in the experimental and the control group for five days in such a way to comprise all preschool activities like Time to Start the Day, Turkish, Science, Games, Movement, Art and Music. The researcher came to the class before children and started observing them as from they entered the educational environment until they went home. As the class teacher realized activities with children, the researcher observed them and took notes regarding the observation. Four children were observed in a day and the researcher filled the Preschool Social Skill Evaluation Scale as a pretest for the children being observed in the evening of the same day in accordance with observation notes. As a result of analyzing the pretest results, no significant difference was determined between the groups and

thus, the education program started to be applied.

Applying the education program

Social Values Education Program consisted of a 12-week application process and 36 sessions. The education program was applied to children in the experimental group by the researcher in the afternoons for three days a week. Children in the control group continued the normal education program. The education program was applied in classrooms where children received education.

Applying the posttest and the permanence test

After completing the education program, the researcher applied the PSSSES to the experimental and the control group as a posttest and a permanence test (only to the experimental group) in the same environment and conditions with the pretest. The scales were filled according to the observations of the researcher. The permanence test was applied three weeks after the posttest (Duchastel, 1981; Nungester and Duchastel, 1982).

Data analysis

The data that were collected via the PSSSES and the General Information Form were analyzed by using a convenient data analysis program. The distributions regarding the demographic information of children and their families were given as frequency and percentage analyses. As a result of the Shapiro-Wilks test was performed for determining the convenience of the study data for normal distribution, it was determined that the data did not show a normal distribution. Being used for examining the convenience of scores for normalcy; the Shapiro-Wilks test is used in case that the group size is smaller than 50 and the Kolmogorov-Smirnov (K-S) test is used in case that it is larger than 50 (Büyükoztürk, 2008). Mann-Whitney U test was used for determining whether or not the PSSSES scores of children that participated in the social values education showed a difference due to the education, compared to children who did not participate in this education. In this analysis, the "Mann Whitney U" test examined the hypothesis, which suggested that the two independent groups derived from ground masses with the same distribution. Mann Whitney U Test examines whether the scores that are obtained from two unrelated samples show a significant difference or not (Büyükoztürk, 2008).

Wilcoxon Sign Test was used in intragroup pretest-posttest comparisons and posttest-permanence test comparisons. Wilcoxon Sign Test is frequently used in experimental studies which try to determine whether or not there is a significant difference between the pretest-posttest scores in experimental studies and which determine that there is no normal distribution (Seçer, 2013). The significance level was used as .05 and it was determined that there was a significant difference in case that $p < 0.05$ and no significant difference in case that $p > 0.05$.

FINDINGS

This part involves findings regarding the effect of the Social Values Education Program, which was developed within the scope of the study, upon the social skill levels of children in the experimental group. In this part, answers were sought for the following questions.

1. Do the Preschool Social Skill Evaluation Scale scores

Table 6. Results of the Mann-Whitney U test regarding the preschool social skill evaluation scale pretest scores of children in the experimental and the control group.

Pretest	Group	N	\bar{x}	Mean rank	Rank sum	U	p
Onset Skills	Experimental group	20	36.80	18.70	374.00	164.00	0.328
	Control group	20	39.80	22.30	446.00		
Academic Support Skills	Experimental group	20	36.60	20.08	401.50	191.50	0.817
	Control group	20	38.55	20.93	418.50		
Friendship Skills	Experimental group	20	40.95	19.38	387.50	177.50	0.539
	Control group	20	43.95	21.63	432.50		
Emotional Management Skills	Experimental group	20	34.45	18.05	361.00	151.00	0.181
	Control group	20	37.05	22.95	459.00		
PSSSES Total	Experimental group	20	148.80	18.98	379.50	169.50	0.409
	Control group	20	159.35	22.03	440.50		

p>0.05.

of children that participated in the Social Values Education Program vary according to the effect of the education program?

2. Are the Preschool Social Skill Evaluation Scale scores of children that participated in the Social Values Education Program permanent?

Examining the pretest score averages of the subscale of Onset Skills in Table 6; it is observed that the score average is 36.80 for children in the experimental group and 39.80 for children in the control group. There is no statistically significant difference between the pretest scores of the subscale of Onset Skills in the experimental and the control group (U=164.00; p>0.05). Examining the pretest score averages of the subscale of Academic Support Skills; it is observed that the score average is 36.60 for children in the experimental group and 38.55 for children in the control group. There is no statistically significant difference between the pretest scores of the subscale of Academic Support Skills in the experimental and the control group (U=191.50; p>0.05). Examining the pretest score averages of the subscale of Friendship Skills; it is observed that the score average is 40.95 for children in the experimental group and 43.95 for children in the control group. There is no statistically significant difference between the pretest scores of the subscale of Friendship Skills in the experimental and the control group (U=177.50; p>0.05). Examining the pretest score averages of the subscale of Emotional Management Skills; it is observed that the score average is 34.45 for children in the experimental group and 37.05 for children in the control group. There is no statistically significant difference between the pretest scores of the subscale of Emotional Management Skills in the experimental and the

control group (U=151.00; p>0.05). Examining the pretest total score averages of PSSSES; it is observed that the total score average is 148.80 for children in the experimental group and 159.35 for children in the control group. There is no statistically significant difference between the pretest scores of the Preschool Social Skill Evaluation Scale (PSSSES) in the experimental and the control group (U=169.50; p>0.05).

Examining the posttest score averages of the subscale of Onset Skills in Table 7; it is observed that the score average is 56.50 for children in the experimental group and 44.70 for children in the control group. There is a statistically significant difference between the posttest scores of the subscale of Onset Skills in the experimental and the control group (U=31.500; p<0.05). Posttest scores of the experimental group are significantly higher than the posttest scores of the control group. Examining the posttest score averages of the subscale of Academic Support Skills; it is observed that the score average is 53.85 for children in the experimental group and 40.95 for children in the control group. There is a statistically significant difference between the posttest scores of the subscale of Academic Support Skills in the experimental and the control group (U=25.000; p<0.05). The significant difference is observed to be on behalf of the experimental group. Examining the posttest score averages of the subscale of Friendship Skills; it is observed that the score average is 62.50 for children in the experimental group and 48.20 for children in the control group. There is a statistically significant difference between the posttest scores of the subscale of Friendship Skills in the experimental and the control group (U=11.000; p<0.05). The significant difference is observed to be on behalf of the experimental group. Examining the posttest score

Table 7. Results of the Mann-Whitney U test regarding the preschool social skill evaluation scale posttest scores of children in the experimental and the control group.

Posttest	Group	N	\bar{X}	Mean rank	Rank sum	U	p
Onset Skills	Experimental group	20	56.50	28.93	578.50	31.500	0.000*
	Control group	20	44.70	12.08	241.50		
Academic Support Skills	Experimental group	20	53.85	29.25	585.00	25.000	0.000*
	Control group	20	40.95	11.75	235.00		
Friendship Skills	Experimental group	20	62.50	29.95	599.00	11.000	0.000*
	Control group	20	48.20	11.05	221.00		
Emotional Management Skills	Experimental group	20	53.05	29.78	595.50	14.500	0.000*
	Control group	20	39.65	11.23	224.50		
PSSSES Total	Experimental group	20	225.90	29.45	589.00	21.000	0.000*
	Control group	20	173.50	11.55	231.00		

* p<0.05.

Table 8. Results of the Wilcoxon sign test regarding the difference between the posttest and the permanence test scores of children in the experimental group in the preschool social skill evaluation scale.

Posttest-permanence test	Test	N	\bar{X}	Negative mean rank	Positive mean rank	z	p
Onset skills	Posttest	20	56.50	00	4.00	-2.460	0.014
	Permanence test	20	56.95				
Academic support Skills	Posttest	20	53.85	7.17	6.63	-1.384	0.166
	Permanence test	20	53.50				
Friendship skills	Posttest	20	62.50	3.50	4.38	-632	0.527
	Permanence test	20	62.60				
Emotional management skills	Posttest	20	53.05	4.64	3.50	-2.124	0.034
	Permanence test	20	52.55				
PSSSES Total	Posttest	20	225.90	8.56	6.08	-1.038	0.299
	Permanence test	20	225.60				

* p>0.05.

averages of the subscale of Emotional Management Skills; it is observed that the score average is 53.05 for children in the experimental group and 39.65 for children in the control group. There is a statistically significant difference between the posttest scores of the subscale of Emotional Management Skills in the experimental and the control group (U=14.500; p<0.05). The significant difference is observed to be on behalf of the experimental group. Examining the posttest score averages of the PSSSES; it is observed that the total score average is 225.90 for children in the experimental group and 173.50

for children in the control group. There is a statistically significant difference between the posttest scores of the PSSSES in the experimental and the control group (U=21.000; p<0.05). The significant difference is observed to be on behalf of the experimental group.

Examining the score averages of the subscale of Onset Skills in Table 8; it is observed that the posttest score average is 56.50 and the permanence test score average is 56.95 for children in the experimental group. It is observed that the permanence test score averages are higher than the posttest score averages and there is no

statistically significant difference between the posttest scores and permanence test scores of the subscale of Onset Skills ($z=-2.460$; $p>0.05$). Examining the score averages of the subscale of Academic Support Skills; it is observed that the posttest score average is 53.85 and the permanence test score average is 53.50. It is observed that the permanence test score averages are lower than the posttest score averages and there is no statistically significant difference between the posttest scores and permanence test scores of the subscale of Academic Support Skills ($z=-1.384$; $p>0.05$). Examining the score averages of the subscale of Friendship Skills; it is observed that the posttest score average is 62.50 and the permanence test score average is 62.60. It is observed that the permanence test score averages are higher than the posttest score averages and there is no statistically significant difference between the posttest scores and permanence test scores of the subscale of Friendship Skills ($z=-632$; $p>0.05$). Examining the score averages of the subscale of Emotional Management Skills; it is observed that the posttest score average is 53.05 and the permanence test score average is 52.55. It is observed that the permanence test score averages are lower than the posttest score averages and there is no statistically significant difference between the posttest scores and permanence test scores of the subscale of Emotional Management Skills ($z=-2.124$; $p>0.05$). Examining the score averages of the Preschool Social Skill Evaluation Scale; it is observed that the posttest score average is 225.90 and the permanence test score average is 225.60. It is observed that the permanence test score averages are lower than the posttest score averages and there is no statistically significant difference between the posttest scores and permanence test scores of the Preschool Social Skill Evaluation Scale ($z=-1038$; $p>0.05$). According to these results, it could be suggested that the Social Values Education Program that was applied in the experimental group is still effective upon children.

DISCUSSION

In this study, we examined the effect of the Social Values Education Program upon the social skill acquisition of nursery school students. Examining the findings; it was observed that the PSSSES pretest scores of children in the experimental and the control group were very close to one another and there was no significant difference between them. This condition is associated with paying attention to criteria like preferring schools that would be located in the same neighborhood, close to one another and have similar parent profiles while determining the study groups. In an experimental study, the pretest scores of the experimental and the control group should be close to one another as much as possible (Kaptan, 1998).

In the study, the Social Values Education Program consisting of 36 different sessions was applied to children in the experimental group for 12 weeks. It was observed that the posttest scores of children in the experimental group were considerably higher than pretest scores, which was associated with the effect of the education program. Posttest scores of the experimental group were significantly higher in the lower dimensions of the scale and in the entire scale, compared to the posttest scores of the control group.

It was observed that the Social Values Education program which was applied to children in the experimental group in the light of study findings supported the social skill acquisition of children. Values education could be used as an alternative method in supporting the children with social skill deficiency. As a matter of fact, similar results were presented in studies that were conducted by different researchers (Dereli, 2014; Neslitürk, 2013; Samur, 2011; Cheung and Lee, 2010; Elhassan and Kâhil, 2005). Some researchers stated childrens gain values in pre-school period such as; helpfulness, co-operation, friendship, honesty, forgiveness (Alpöge, 2011; Dinç, 2011; Gunnestad et al. 2015; Ogelman and Sarıkaya, 2015; Sapsağlam, 2015). Warneken and Tomasello (2007), they was do research and demonstrated yet 18 month old baby helping araround people. Examining the results of relevant studies, it is observed that providing values education or character education for preschool children has a positive effect upon the social development, emotional development and social skills of children. There was no effect on the social skills of children and their parents demographic characteristics. Those data's do not contain important difference.

Social skills are highly important for a sustainable social life. Children with advanced social skills become more successful in communicating with people, meeting the requirements of social life, participating in social environments, following the social norms and rules, and complying with the environment. Acquisition of these skills in early childhood years is important in terms of internalizing the skills and using them in social life.

Children who fail in making friends and acquiring social skills that would enable them to successfully sustain the friendships have a number of social and emotional risks like being rejected by their peers, as well as loneliness and lower self-confidence (Merrell, 1999). The studies show that children who suffer from a self-control deficiency and problems with expressing their feelings and display aggressive and maladaptive behaviors in the preschool period will experience social adaptation problems and emotional disorders in the future (Egeland et al., 2002). Skills that are acquired by children in the preschool period generally underlie their future education (Pagani et al. 2005).

Values education and character education are among the concepts that define a successful education in terms

of student success and academic acquisitions (Lovat, 2011).

Three weeks after applying the posttest for determining the permanence of the education program, which was performed within the scope of the study, upon the social skills of children; the researcher reapplied the PSSSES form as a permanence test to children in the experimental group. As a result of the analyses; it was observed that the Social Values Education Program that was applied to children in the experimental group was still permanent and the difference between the posttest and permanence test scores of children in the experimental and the control group was not significant in the lower dimensions of the scale and in the entire scale. According to these results; it could be suggested that the Social Values Education Program that was applied in the experimental group is still effective upon children.

According to the study results; the following recommendations were made for trainers and researchers.

(i) There are many studies indicating the positive effects of the applications and activities of values education upon the development of children. Thus, it is recommended for preschool education teachers to involve "Values Education and Social Skills Education" in their education programs and educational activities.

(ii) It is recommended for the Ministry of National Education to organize in-service education programs regarding the "Values Education, Social Skills Education and Communicational Skills Education" for preschool education teachers in such a way to also include social skills.

(iii) It is important for children to have real life experiences by means of which they could learn by practising and experiencing. It is recommended for preschool education teachers to involve intraclass activities based on real life experiences by means of which children could learn Social Skills via Social Values and enable children to acquire and internalize social skills.

(iv) It is known that behavioral problems are encountered more frequently in children living in lower socio-economic environments. Supporting the social skills via the Social Values Education Program may be effective upon preventing behavioral problems and undesirable behaviors at schools especially in lower socio-economic environments.

(v) This study examines the effect of Social Values Education Program upon the social skill acquisition of nursery school students. It is recommended to investigate the effect of Social Values Education upon academic success, communicational skills, cognitive development and language development of children.

Conflict of Interests

The authors have not declared any conflict of interests.

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Full Length Research Paper

Education of the gifted students in Turkey and a sample activity

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After the Enderun College which successively provided gifted education during the Ottoman period, special education for the gifted in Turkey was interrupted. The discussion of talent education started after 1993 and an education model convenient to the conditions in Turkey was developed following the steps of how it is done in other parts of the world. In order to apply this education model, institutions called "the Center of Science and Art" were opened. During the early educational stages of those institutions, the aim was to give "Discipline Based Art Education" while at the later stage, it provided art education for the production of art works. This qualitative study is a response to the insufficient publications of visual arts in the education of the gifted students in Turkey; in the form of "Action Research". In the study, the education of gifted students in visual arts in Turkey was analyzed and an art education at the level of conformity was presented through observation.

Key words: Superior ability in art, the center of science and art, art activity, art education.

INTRODUCTION

Numerous explanations have been given to describe gifted students in the field of art. Gifted students in the field of art are those who generally become prominent through their ability to make drawings which show original ideas or innovations, independently based on their advanced abilities (Cukierkorn, 2008:24). Such gifted students usually possess different traits and as such require specialized education. This form of education was provided by Enderun college (Enç, 2004: 39) which is one of the basic foundations of Ottoman Empire for power and welfare. The objective of this college is to train gifted children for the top management or military positions to serve in the Ottoman Empire. In this school which art education is also taught, the aim is to train each

student in at least a field of art (Corlu, 2010: 21-22). Although it stems from such origin, education of the gifted in the field of art in Turkey has been neglected for a long period of time after these schools.

In 1956, the state made provisions to provide specialized education both abroad and in the stateside for students who display extraordinary abilities in the field of art (Davasligil, et al., 2004: 56), since after then, the necessity for gifted education did not come into agenda until 1993. After 1996 (Akarsu, 2004: 150), "the Center of Science and Art" (Bilsem) which provided education support to gifted students became popular. Just like in Enderun, science and art were integrated into the education of these schools.

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In Bilsem where they use a five-step education system (Davaslıgil, et al.,2004: 62), “discipline based art education” which includes art history, art criticism, aesthetics and art applications in the first three steps is provided for mentally and artistically gifted students. In one of the the stages which is “Developing Special Talents” and “The Project”, Bilsem provides art education to gifted students on art productions. In this stage, the students are involved in the art activities either in group or individually and therefore gain the ability of study alone.

In this study, the education of gifted students in the field of art in Turkey and the educational stages of the Center of Science and Art were analyzed and Bilsem “Compliance” training was presented through an activity observed in the course of Visual Arts.

METHODS

This qualitative study was carried using the “Action Research” model. This is a research approach which aims toward understanding and sorting out a problem in an application process and is conducted by the applicant itself or by the aid of another researcher (Yıldırım and Şimşek, 2005, 295). This approach which aims to develop school-based and classroom-based educational applications is generally conducted by the teachers (Demirel, 2005, 52).

In the study, the education of the students who are regarded as gifted in the field of art was examined through literature reviews for the educational stages of the Center of Science and Art, the “Orientation”, the first stage of Bilsem education, was presented through an activity conducted in the course of visual arts.

While establishing the study group, an easily accessible status among the purposeful sampling methods was employed since there is only one Center of Science and Art in Konya and the researcher has been working as a visual arts teacher in this institution for five years. The activity was conducted on 22 students (13 boys and 9 girls) at the level of “Orientation” period (third grade of primary school) of the Center of Science and Art. The study was limited to three hours of lesson and observation by the researcher.

As for data collection tool, “the Teacher Observation Form” was used. During the process of preparing the form, the literature was first considered. The headings and the clauses were also deliberated upon. The form consisted of open-ended questions, the aim was to find answers to questions such as: whether students liked the activities or not, whether the discipline based art education complies with the orientation process, and to what extent the activity is beneficial for the students. The data of the research were obtained by the researcher through observation. Data were descriptively analyzed.

The art education of the gifted students in Turkey

The gifted (especially talented) people in the visual arts are the individuals who display extraordinary abilities in one or more fields of art (Boland, 1986: 19) and they have advanced level of communication and imagination (Cited by Alshouse, 2008:1). Although the education of those individuals is little if any most recently in Turkey, the Enderun College which served during the period of Ottoman Empire provided sublime education. The “Enderun” where the gifted education was systematically applied for the first time in the world undertook the most significant missions for the development and maintainance of the Ottoman Empire

(Enç, 2004: 38). Gifted-talented students were chosen for those schools in their early ages, they were provided the best educational opportunities and assigned to positions at every level of the state government (Özmen and Kömürlü, 2013: 42). A great importance was given to practices and handcraft in the school program when compared to perceptions related to education. The students had to learn one of the fields of art. Moreover, Enderun included significant elements of current perceptions related to education through its flexibility which is convenient to support and develop individual concerns and abilities (Enç, 2004: 39-42). The education system of the school enabled students to be trained multi-functionally as wise and perfect people rather than only scientists, artists or soldiers (Corlu, et al.,2010: 22).

Except the Law No 6660, no application of special education law was passed since after the Enderun College until 1993. Through the aforementioned law issued in 1956, educational arrangements were made to accomodate gifted students in the field of visual arts (Enç, 2005: 9). Through this arrangement, students who display extraordinary talents in the fields of music and art were given the opportunity to study either domestically or abroad through legal opportunities.

As a result of numerous studies stating that gifted students have different educational needs thus in 1993 there was establishment of schools in order to train the gifted ones in the fields of science and art came into agenda. Those schools which are called “the Centre of Science and Art” (Dönmez, 2004: 71) were increased in number through adaptations of the educational laws in Turkey.

The notion of “Bilsem” which started to gain popularity in 1996 (Akarsu, 2004: 150) was established through adapting it into current economic, social and cultural conditions and educational system of Turkey considering the most contemporary studies and theories in the world (Uzun, 2004a: 25). The opportunity which was available to the students; to be educated in the company of their peer groups is one of the most commonly preferred methods in the world. In different parts of the world, there are “Scientific Centers” for the education of students in the field of science and “Art Centers” for the educations in the field of art. Considering the existence of these two types of institutions, the two centers were merged with the thought that the science cannot be distinguished from art and art cannot be distinguished from science and through this system which is peculiar to Turkey, “the Center of Science and Art”, was established (Ataman, 2007: 22–23). Clark and Zimmerman (1998: 746) who conducted long researches on the education of gifted people have believed that the fields of science and art in the education of gifted people should be integrated into each other. The establishment of Bilsem’s has been a move in this direction.

This form of education was adjusted to the conditions in Turkey so that the students who attend the morning sessions for their formal training may come in the afternoon while those who attend the sessions in the afternoon may attend this education in the morning. The students receive basic education from the school where they attend with their peers while they receive information in the fields of science and art that they are superior in Bilsem. Thus, the students have the opportunity of special education without being isolated from their peers and class-mates (Dönmez, 2004: 72). The objective of Bilsem which starts from preschool education till the of secondary school (Davaslıgil, et al., 2004: 61) is to develop the gifted or special talented students at the stages of pre, primary and secondary school into individuals who can combine scientific thoughts and attitudes to aesthetic values in solving problems (Uzun, 2004: 26).

The art education in the centre of science and art

The education of students with superior abilities in visual arts which require services and activities that cannot be obtained in normal

schools (Hurwitz and Day, 2001: 91) is provided within the framework of the Center of Science and Art today. This education has similarities with Enderun which includes many significant characteristics of modern education (Enç, 2004: 42). Enderun education is like a pyramid which gets narrower at the top rather than a mass education eğitimi (Özmen and Kömürlü, 2013: 46). Similarly, there is a five-step education program in Bilsem which increasingly focuses on the field of interest among the students. Those steps are as follows: "Orientation", "Support", "Providing Recognition of Individual Abilities", "Developing the Special Abilities" and "Project" programs. During each educational step with durations determined by the center, the programs are evaluated for the students by the teachers during and at the end of the process and evaluation reports are prepared (Davaslıgil, et al., 2004: 61-62).

According to Alexander (1981: 41), two burdens are laid on art educators: The first one is to provide education to mentally talented students (those who get 130 and higher scores in IQ test), the second is to provide necessary art education to the students superior in the field of art. Armed with the same responsibilities, the art educators at Bilsem provide "Discipline Based Art Education" during the stages of Orientation, Support and Recognizing Individual Abilities among the educational steps of Bilsem while they provide art education for art production during the stages of Developing Special Abilities and Project.

For the education of the gifted people in visual arts, "the Discipline Based Art Education" suggested by Clark and Zimmerman (1986: 54) consists art history, art criticism, aesthetic and art applications. This is also accepted by Boland (1986: 22). This education is given to the students who are superior in a field of art as well as mentally talented students. During the stages of Developing Special Abilities and Project, an education for artistic production is given to the students who are superior in the field of art, whose deficiencies were remedied and supported from the point of their interest field.

Orientation program

Using the activities prepared during the education which begins with orientation period, the levels of cognitive alertness, affective, social and psychomotor fields among the students are determined (Bilsem Guidelines, 2007: M. 4-17). In the activities of visual arts, the aim is to provide both the orientation of the students to Bilsem and their friends and to reveal their interests for the visual arts. According to Renzulli and De Wet (2010: 28) who draws attention to the conformity between the education to be given and the readiness of the students, the fields of interest and abilities play an important role in the learning and creativity and that the quality of the education to be given increases in proportion with the level of interest.

In art education, recognizing level of student's readiness is an important step (Cukierkorn, 2007: 1). The level of the students' readiness for the field of art as well as their interests is revealed through "Discipline Based Art Education". In this method, continuous practice develops their expressive strength, art criticism develops their ability to see in depth while the art history enables the students to comprehend the concept of time and space. Aesthetics provide the students the ability to express the qualifications they see. The aim of "Discipline Based Art Education" is to develop the ability of the students in coping with the problems in those four fields (Özsoy and Şahan, 2009: 208-209).

The students are given responsibilities through individual activities as well as group activities and the students are enabled to prove themselves to their other friends in written and verbal expression, painting and shaping. In such a working environment, Bilsem teachers are also enabled to conduct observations on the works and attitudes of the students. Those observations made by

the teachers are collected and used as data in the analysis of the abilities of the students.

Supportive education program

The supportive education is the stage where the students are supported and sorted out according to their interests. In this program, the students are classified into groups according to their performances and interests which were observed during the previous orientation program: and an education program is adopted accordingly.

Since the environment is supportive, flexible and intellectual, it encourages the students, and makes the development of art more effective (Clark and Zimmerman, 2004: 13). The students are encouraged to participate in the art activities, allowed to make mistakes, and use the art materials. While the students have the opportunities to exhibit their creativity in the activities related to art, they are asked questions to make them find specific expressions and ways of solution in the examination of an art work. The students who are responsive in the activities are given responsibilities in the different sections of the applications and they are enabled to find solutions. It is stated that the gifted individuals in the field of art displayed original ideas or innovations and high level of motivation and problem solving ability (Cukierkorn, 2007: 2). The use and development of those characteristics is executed through the prepared visual art activities.

The feedbacks based on the observations and products executed by the educators during and after the process of applying the supportive education are evaluated and the fields of concern and interest among the students are determined (Bilsem Guidelines, 2007: Article 17). This determination is used for the following step of education.

The program for recognizing the individual abilities

Considering the cognitive, affective, social and psychomotor capacities of the students; student groups are formed in accordance with the observations conducted during the orientation and supportive education and determined ability fields. In this program, the field in which the students are talented and their individual ability which have been pre determined.

In order to make the students recognize their individual abilities, visual art activities which highlight their creativity and are related to individual differences are organized. Garcia (2006: 6) states that the individual abilities of the gifted students should be recognized and the student should be individually fed with the core of education from the point of visual ability. It is also stated that the environment should be free from the interference of teachers (Clark and Zimmerman, 1986: 54) and the students should be encouraged to think independently and carry out original activities (Clark and Zimmerman, 2004: 13). For this purpose, the students should be encouraged to study and use the necessary instruments as well as providing convenient environmental conditions for art education.

The feedbacks based on the observations and products executed by the board of teachers during and after the process of applying the supportive education are evaluated and the fields of concern and interest among the students are determined for the following education step.

Program for developing the special abilities

The program related to the development of special abilities is prepared to provide knowledge, abilities and attitudes which are deep and advanced enough to enlarge its contents will be prepared (Bilsem Guidelines, 2007: Article 15). During this period which the

students who have preferred working in the field of art or have been successful in this field receive education for the art production, the existing potentials of the students are turned into performance.

Although "Discipline Based Art Education" is given in the previous periods, an education towards art production is given at this stage and the project period afterwards. Since a well-equipped workshop and working environment without time limitation are important to sort out the art problems (Clark and Zimmerman, 2004: 15-17), the convenient working conditions are provided to the students. While the students are encouraged to use their own perceptions and abilities in the art and create new techniques and forms in art production, at the same time, the students are made to choose their projects from real life and conduct specific activities.

During the process of theoretical activities and applications, the teachers conduct observations on the students and regroup the students for the following period according to their characteristics.

Project production program

In this programme, the aim is to make the students who have gained the basic abilities before the project actualize themselves during the project period and train them as producing and problem solving individuals. Again this period is the time when the students conduct art activities through an internally oriented discipline instead of an externally enforced discipline. This means that the students think independently and creatively and act either individually or in groups. During this period, the main objective is to see to it that the students apply the solution they develop to the projects they choose and learn on their own (Levent, 2011: 96).

Since development of giftedness in the field of art varies among all the students (Clark and Zimmerman, 2004: 16), they are classified into the groups of 3-5 people according to their development, abilities and preferences (Bilsem Guidelines, 2007: M. 17). Thus, the students who are at different development levels of art may work in different groups or individually.

In the art education of gifted people, it is important that students develop working ability independently and alone and focus on completing the work (Cited by: Boland, 1986: 22-23). At this stage, the students are encouraged to decide the period spent on the work; from figuring out the problem and finding the solution to it; which they achieved either as individuals or in groups. This is the factor which shows the eagerness of the gifted students.

An art education activity given during the process of orientation

Through the activity called "A Copying Activity from the Theory of Art", the aim was to study the theories of art and conduct reproduction activity related to the topic. Four teachers also participated in this activity which takes three periods according to Bilsem Guidelines (2007: M. 17).

The students were asked questions such as "Have you been to the exhibitions?", "Which exhibitions did you see?" and the aim was to prepare them for the activity. The answers given by the students were listened to carefully and an opinion was formed about their readiness of and interest in art. The students stated in their answers that they participated in the exhibitions organized by the schools. Three students stated that they visited the exhibitions in the exhibition halls.

By asking the question "Are the exhibitions continuous?", all the students were made to talk about the importance of exhibitions and they were made to participate actively in the lesson. The responses of the students were quite interesting. The expressions of students such as "They are necessary, because we gain information about what the other people are doing" "What does it matter about what

we do if we don't exhibit our products?" was written on the board and responses were discussed.

Using the question "What about visiting an exhibition together now?", the students were prepared to attend the exhibition. The exhibition consisting of five works in four different types in accordance with the theory of art: "Reflective", "Expressionist", "Functional", and "Formalist" which were previously prepared.

After the exhibitions, the students were asked the question "Which exhibition did you like?" and they were asked to explain their preferences. Through the question "What was the reason for your preference?", all the students were made to express their opinions. Among the given answers, it is seen that fourteen students preferred realist and narrative pictures (Pictures 1 and 2). As for the reason, they gave the responses such as "Very realistic", "Convincing", "it is well explanatory" and "It appeals to my feelings" for the 1st and 2nd exhibitions. For the 3rd and 4th exhibitions, they used expressions such as "It is extra ordinary", "It takes me to the other worlds" and "Whenever I look at it I see different things". When the given responses are gathered, the issue "Theories of Art" was presented through active participation of the students.

After the conversations, a student chosen as the secretary was asked to write the name of four theories on the board in the classroom after the question "Which theory would you hang on your wall?" the name of the students were written under the theory they prefer and groups consisting of the students who prefer a similar theory were established. Considering the distributions of girls and boys, the students were classified into the groups of 4 or 5 people, two groups for "Reflective", and a group for each of "Expressionist", "Formalist" and "Functional" theories were formed.

When the activity ended, each student was asked to suggest the next activity to be carried out based on their preferred artist. After the research topic was given, the students were told that the members of the groups could gather in Bilsem on the day that was agreed on in order to conclude their study. Moreover, they were asked to make drawings related to the theory they prefer in the following activity and bring a reproduction of a work from their preferred theory.

In the second stage of the activity, the students were asked whether they liked the activity or not and an introduction was conducted after getting feedbacks related to the activity. Generally, it was seen that the students enjoyed the activity, they prepared for and participated in it. Since students had a pre-knowledge, they immediately wanted to start the application study. Four groups brought copies of the work of the artist they intend to reproduce. The other group stated that they decided what to work on but forgot to make copies of it. After these were sorted out, the acrylic activity was conducted on the 70x100 cm size canvasses.

While working on canvasses, the teacher guided the students. It was understood that art work may not always turn out great and the artists had to repeat their activities so many times; thus, the students were encouraged. When the students asked for help, solutions were discussed without intervening to the work and decisions and preferences were left to the students.

When the lesson ended, it was explained to the students that each group will give presentations on the art theory they researched to the other groups after the reproduction activity was concluded in the following activity and then the lesson was ended.

In the third stage of the activity, the completed works of the students were exhibited in a place where the other students could see. In the second half of the activity, the works which students had previously prepared as the research homework were presented. Each group presented their works within a period of five minutes. When the activity came to a conclusion, the students were asked about the creditable and antipathetic aspects of the activity and they were asked to evaluate the activity. The obtained feedbacks were recorded by the observing teachers in order to determine the interest fields of the students and use it in preparing the next activity and then the lesson was ended after thanking the students.



Picture 1. Reflective, expressionist, functional and formalist art theories exhibition.



Picture 2. The painting practices of the students in Bilsem.

FINDINGS AND DISCUSSION

The activity conducted during the process of orientation consisted of the following stages: students going to the exhibition, making their choices on the art theories, and conducting researches and practicing applications. The activities were conducted so that it as to appeal to the abilities of the students to see, question, and work individually and cooperatively.

On whether the students enjoyed the activity, the students' enthusiasm for the activity, their desire to start the activity immediately, and their waiting for the next activity impatiently all showed that they were interested in the activity. The students answer the questions ambitiously, they freely expressed their ideas, they waited for their turn patiently; summarily, they all liked the activity. The students interacted among themselves, struggled for distribution of tasks, competed for activity roles and come to the activity prepared; these all prove that they have good-participation to the activity. Although there is a little noise especially resulting from the cooperation of the students during the activity, it was seen that the students were generally interested in the activity.

The students' level of readiness were determined through the orientation process and the aimed was to provide the harmonization with Bilsem and their partners.

The responses of the students were patiently listened to and it was seen that the discipline based art education orientation process served its purpose which was to evaluate the students' level of eagerness and to help determine their field of interest. The group work as well as the individual work contributed to the conformance among the students during the activity. The cooperation among the students, their working together, helping one another and sharing with and accepting one another contributed to the adjustment process in Bilsem.

The activity was designed to be beneficial to the students from the points of working individually and in groups, making individual selections and building courage in researching and working. Since group work in the art education is as important as individual work (Clark and Zimmerman 2004: 14), the opportunity to work individually was also given to the students through research homeworks. Due to the the exhibitions they saw and the research topics they conducted, the students consolidated the knowledge that was gained through visual expressions. Leon et al., (2010: 18) stated that the students should be courage to use their knowledge and should solve their problems themselves. In the conducted activity, group activity among the students provided the students the opportunity to have access to the knowledge of the other group members, and use the knowledge to sort out the problems related to the group

and art. The students livened up the activity by providing diversity to the activity through their individual specific contribution. Cukierkorn (2006: 180) posits that the students should have courage against disappointment which may encountered during the art activities. In the conducted activity, the students were guided and encouraged to do much better without being criticized for the mistakes or flaws in their activities.

The activity was initiated by asking questions which the students could easily answer and it was aimed to consistently keep the students active and engaged throughout the activity. The students were allowed to make their choices of art theory without interference. The work and decisions of the students who were continuously encouraged throughout the activity weren't directly interfered. The preferences and the choice of solution to problems were left to the students and their opinions were always regarded. At the end of the activity, the students presented the works they conducted to their colleagues.

At the end of the activity, the questions were asked about the creditable and antipathetic manners of the activity and feedbacks were obtained from the students about the activity. The executed observations and the student feedbacks were kept to determine the interest fields of the students and used in the following activity.

CONCLUSION AND SUGGESTION

It was concluded that the students were eager in the conducted activity, they were free to express their opinions, they came to the courses after doing researches, they like the activity and found it entertaining and enjoyable.

It was concluded that conducting the activity through "Discipline Based Art Education" would be convenient and useful in determining the readiness levels of the students, providing the conformity among the students and determining the interest fields of the students. It was also concluded that "Discipline Based Art Education" was beneficial since the students play active roles, and were guided rather than taught. Moreover, it was concluded that "the Discipline Based Art Education" was beneficial from the points of encouraging the students to succeed in their works, paying attention to their decisions and choices and improving their oratory and presentation abilities.

Because of the advantages of the "Discipline Based Art Education" for students; that is the inclusion of history of art, art criticism, aesthetic and application, it is recommended to use the visual arts of the "Discipline Based Art Education" in all the stages of gifted education. Because the discussion of history of art, art criticism, aesthetic and application in the same topic and in such a manner that they are all interwoven will be of maximum advantage to the student, an activity must be designed by using at least two disciplines of the history of

art, art criticism, aesthetic and application. Because the discussion of history of art, art criticism, aesthetic and application all together provides contribution to the application skills of art education, it is recommended to use the "Discipline Based Art Education" beside the compliance training of Bilsem (Art and Science Center) in the stage of education of support and individual skills. It is also suggested that free working hours and places should be established in Bilsem, so that the students may work in comfort when they get together with their friends and share their opinions and knowledge.

Conflict of Interests

The authors have not declared any conflict of interests.

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