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Strengthening preceptors' competency in Thai clinical nursing

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The problem of lack of nurses can be solved by employing student nurses. Obviously, nurse instructors and preceptors have to work extremely hard to train student nurses to meet the standard of nursing. The preceptorship model is yet to be explored as to what it means to have an effective program or the requisite skills to be an effective preceptor. The purpose of this study is to explore how competencies and learning methods can improve nurse preceptors. The objectives of this study are to (1) identify the components of nurse preceptors' competency and their indicators, (2) determine learning method applicable to program development of qualified preceptors, (3) obtain empirical evidence of the degree of the importance of the competencies and indicators to the constituents associated with program development of qualified preceptors. This study is a descriptive survey design. A purposive literature review identified 7 relevant preceptors' competencies and 23 indicators. A total of 291 nurses volunteered to complete a questionnaire, indicating support of the desired competencies and preferred learning methods. Findings provide a competency-based model for program development to train nursing student preceptors in Thailand.

Key words: Competency, nurse preceptors, indicators, program development.

INTRODUCTION

There is inadequate number of nurses. This problem will be solved with the employment of student nurses (Srisuphan and Sweangdee, 2012; American Association of Colleges of Nursing, 2014). The preceptorship model bridges the gap between the classroom and clinical area where professional nursing is practiced (Flynn and Stack, 2006). A preceptor is both a clinical teacher and a practicing nurse in a work setting; he/she guides nursing students (or new graduates) in learning how to apply theoretical knowledge. A nurse preceptor is important in the education and socialization process of nursing students (Ousey, 2009). A preceptor's teaching and clinical competencies impact the professional development of nursing students (Spouse, 2001; Zilembo and Monterosso, 2008). Although many nurses have excellent clinical skills, their roles in teaching students are less refined. Therefore, it is essential to have nursing preceptors' programs that strengthen their teaching competencies (Punyathorn, 2009).

Nurse preceptors have many roles in their work setting

in addition to teaching students. It is quite understood that their didactic skills need to be sharpened as they teach during student nurses' clinical practice. Nurses need to develop a preceptor's program to improve the required attributes of preceptors. However, to improve or develop a preceptor's program, a thorough assessment is necessary to understand all the attributes that are needed for the role. In Thailand, as in other countries, the nursing preceptorship model is in use, but is yet to be explored. It would be useful to understand if there are characteristics of an effective preceptor's program and a set of competencies needed to be an effective preceptor.

The Thailand Nursing and Midwifery Council provides the standards expected of qualified nurse preceptors in hospitals and a curriculum for training them (Thailand Nursingand Midwifery Council, 2014). The training for preparing these special instructors is available in multiple educational venues throughout Thailand. However, the immediate needs of individual hospitals for qualified preceptors to attend may exceed the capacity of what the training sessions can provide logistically. Furthermore, hospital constituents interested in preceptors' training may wish to enhance certain aspects of their curriculum and include a variety of learning activities relevant to the contextual needs of their particular circumstances for nurses and nursing students. To do so, there is need for a systematic approach to identify the components associated with the competencies of a qualified nurse preceptor. In addition, evidence is needed from the stakeholders involved in preparing preceptors (i.e., nursing students preceptors, administering preceptor training, and the preceptors themselves) to identify desired curricular enhancements.

Statement of the problem

Preceptor nurses are both clinical teachers and practicing nurses. They guide nursing students and impart them with theoretical knowledge. Preceptors play vital role the education of nursing students. Although many nurses have excellent clinical skills, their roles as teachers are less refined; their competencies are questionable. Hence, it is vital for them to be trained using methods and programs that would strengthen their teaching competencies

REVIEW OF RELEVANT LITERATURE

Identification of preceptors' competencies and indicators

The literature was reviewed purposively to identify components of preceptors' competency. Twelve sources addressed a total of 22 components. The number of components mentioned by individual sources/authors ranged from 1 to 9; that is, one source may identify only one component related to competency whereas another source may address nine components. After examining the similarities and differences between the 12 sources, seven major components were selected as relevant to this study. The criterion to accept the components was based on whether they were mentioned four or more times in the literature. Three additional components were selected because the American Nurses Association includes them as part of the role of preceptors (Ulrich, 2012). These three were combined with the seven identified components.

The component most frequently mentioned was teaching-learning (Cooper and Palmer, 2000; Dawudom, 2007; Fawcett, 2002; Freeman, 2004 cited in Barker, 2006; Gray and Smith, 2000; Perrone-Ambrose Associates, 2007; Nursing and Midwifery Council (United Kingdom; NMC-UK), 2008; Pasasawat and Srisathitnarakul, 2011; Ulrich, 2012), followed by being supportive of students' learning (Canadian Nurses' Association, 2004; Cooper and Palmer, 2000; Dracup and Bryan-Brown, 2004; Fawcett, 2002; Pasasawat and Srisathitnarakul, 2011; Perrone-Ambrose Associates, 2007; NMC-UK, 2008; Ulrich, 2012).

The third most mentioned component was clinical nursing expertise (Cooper and Palmer, 2000; Dawudom, 2007; Fawcett, 2002; Freeman, 2004 cited in Barker, 2006; Gray and Smith, 2000; NMC, 2008; Pasasawat and Srisathitnarakul, 2011; Perrone-Ambrose Associates, 2007). Two components taking fourth and fifth place were ability to communicate and establish relationship (Dawudom, 2007; Dracup and Bryan-Brown, 2004; Freeman 2004 cited in Barker, 2006; NMC, 2008; Pasasawat and Srisathitnarakul, 2011; Swihart et al., 2007) and role modeling (Cooper and Palmer, 2000; Fawcett, 2002; Gray and Smith, 2000; Ulrich, 2012).

Lastly, two components in the sixth and seventh place were: being accessible for consultation (Cooper and Palmer, 2000; Dawudom, 2007; Fawcett, 2002; Pasasawat and Srisathitnarakul, 2011) and leadership (NMC-UK, 2008; Pasasawat and Srisathitnarakul, 2011; Swihart et al., 2007; Ulrich, 2012). Because of their importance, three additional components were included but combined with the seven components: Risk management with leadership; ethics with role modeling; measurement, feedback, and evaluation with teaching.

Criteria for selecting indicators

An additional 13 sources identified 111 indicators of preceptors' competency based on the seven afore-mentioned components. The criteria for selecting 23 of the 111 indicators varied for each component as mentioned in the literature.

1. Teaching-learning: giving constructive feedback, evaluation (Boonnoon, 2002; Downudom, 2007; Joyce, 1996; Cooper and Palmer, 2000; Sutachai, 2012), appropriate teaching method (Joyce, 1996; Dowudom, 2007; Cooper and Palmer, 2000; Sutachi, 2012), and individualized teaching (Boonnoon, 2002; Dowudom, 2007; Joyce, 1996; -Cooper and Palmer, 2000).

2. Being supportive of students' learning: Identifying preferred knowledge source, helping students to adapt, and cooperation between nursing students, institutions, and hospitals (Boonnoon, 2002; Komaratat, 2007).

3. Clinical nursing expertise: Using nursing process and clinical experts (Dowdom, 2007; Public Health Nursing Division, 1996), appropriate diagnoses and intervention (Myrick and Barrett, 1992; Dowudom, 2007).

4. Communication and relationship: Effective communication (Dowdom, 2007; Public Health Nursing Division, 1996; Pasasawat and Srisathitnarakul, 2011; Sullivan and Decker, 1992), effective relationships (Boonyanurak, 1995; Cooper & Palmer, 2000; Sullivan & Decker, 1992; Sutachai, 2012), and clear expression of words (Dowudom, 2007; Public Health Nursing Division, 1996; Sullivan and Decker, 1992).

5. Role model and ethics: Enthusiastic, positive attitude, making impression, and ethical behavior (Boonnoon, 2002; Suriyawan, 1990).

6. Consultant: Analyzing needs of new nurses (Boonnoon, 2002; Dowudom, 2007; Cooper and Palmer, 2000; Sutachai, 2012), using reflection to show empathy, and being able to give counsel (Boonnoon, 2002; Dowudom, 2007; Sutachai, 2012)

7. Leadership: Resolving problems (Ratanaruengwatana et al., 2000; Shamian and Inhaber, 1985; Suriyawan, 1990; Sutachai, 2012), time management skills (Sanguansiritum, 1992; Shamian and Inhaber, 1985; Suriyawan, 1990; Sutachai, 2012), being able to give inspiration (Suriyawan, 1990; Rattanaruangwattana et al., 2000; Dowudom, 2007), and fighting for human rights (Dowudom, 2007; Rattanaruangwattana et al., 2000; Sutachai, 2012).

Identification of learning methods

The literature was further reviewed purposively to determine learning methods for educational development. Five sources identified 32 learning methods. The number of methods mentioned by individual sources/authors ranged from one to five. After examining the similarities and differences between the five sources, 10 relevant methods were selected for further examination. The criterion for accepting the learning methods was based on whether they were mentioned in the five sources, at least two or more times. The learning method most frequently mentioned was classroom training (Bangmo, 2004; European Federation of National Engineering Association [FEANI], 2013; Kityunyong and N-Taguatung,

1996; Office of Human Resource Management (OHRM), 2010; National Science and Technology Development (NSTDA), 2007), followed by on-the-job training (OHRM), 2010; Kityunyong and N-Taguatung, 1996; NSTDA, 2007; OHRM, 2010).

Four methods ranked third, fourth, fifth, and sixth are: site visits (Bangmo, 2004; NSTDA, 2007; OHRM, 2010), lecture, brainstorming, group discussion (Bangmo, 2004; FEANI, 2013; OHRM, 2010). The followings were mentioned twice: case study (Bangmo, 2004; FEANI, 2013), self-study/e-learning, learning through reflection, and network learning/sharing experiences (Kityunyong and N-Taguatung, 1996; FEANI, 2013). Five additional activities mentioned twice were eliminated because they were deemed impractical styles for gaining role competencies as nurse preceptors (e.g., project assignment, continuing education).

METHOD

Research design

A descriptive survey design was used to obtain information on how competencies, indicators of competencies and learning methods would improve nursing student preceptors. Literature was reviewed purposively to identify the preceptors' competency, indicators of competencies and learning methods. Stakeholders were asked of the requirements needed to provide the program. Participants responded to a paper-and-pencil questionnaire. The participants were anonymous to the researcher; no names appeared on the questionnaire and the participants' responses are confidential. The research study was formally approved by the appropriate university Institutional Review Board (IRB) and one hospital ethics committee. Three hospitals and two colleges of nursing accepted the university IRB's approval.

Sample and setting

The study was conducted in one of the 12 health regions in Thailand. The population included the academic directors of two nursing colleges, who have experience as nurse preceptors, nursing instructors who have experience in clinical teaching and nursing students who have experience being taught by nurse preceptors, the directors of nursing of four hospitals who have experience as nursing student preceptors and the preceptors in the hospitals appointed by nursing colleges. The total population was 1155. All participants less than 10 were selected while for those more than 10, 1:4 was selected. Two academic nursing directors and four directors of nursing were purposively sampled. Also, 255 of the nursing instructors and students were systematically sampled using every fourth name on a list generated by the two colleges. A convenience sample of 30 preceptors was identified by hospital administrators. All of the population was chosen equally and represented. The total sample was 291 participants. The sample size of 291 was based on the Krejcie and Morgan table (Sri Sa-ard, 2008) that allows for a 5% margin of error and 95% confidence. The survey return rate was 100%.

Measures

Based on the review of relevant literature, the researcher developed

Table 1. Levels of agreement on the seven components of nursing student preceptors' competency and the need for improvement.

Components of nursing students' preceptor competency	Level of opinion		Level of need	
	Mean*	SD*	Mean*	SD*
1. Teaching-learning	4.4	0.6	4.3	0.7
2. Being supportive of student learning	4.3	0.6	4.2	0.7
3. Clinical nursing expertise	4.5	0.6	4.3	0.7
4. Communication and relationship	4.4	0.6	4.3	0.7
5. Role modeling and ethics	4.3	0.7	4.4	0.7
6. Accessible for consultation	4.3	0.7	4.3	0.7
7. Leadership	4.3	0.6	4.3	0.7

* All values were rounded to one decimal place.

one questionnaire for all participants with specific directions for sections to complete. There was a set of items with 5-point Likert response options asking for opinions of agreement whether preceptors should possess the seven components of competency. Participants chose one of the following options: 1 = Strongly Disagree; 2 = Disagree; 3 = Neither Agree nor Disagree; 4 = Agree; 5 = Strongly Agree. In another set of items, participants were asked to respond to whether preceptors need development in each of the seven components of competency. They responded using the same 5-point Likert scale. Average level of agreement was calculated for each component.

On a grid listing the seven components of competencies (rows) and learning activities (columns), participants were asked of the required learning method needed to develop each competency. Participants could select more than one activity for each component. The number of selections tallied with each component to determine the overall preferred methods of learning.

Seven doctoral-prepared experts evaluated each item of the questionnaire for content validity using an index of congruence (Rovilnelli and Hambleton, 1977). Two experts had five years of experience working with preceptors, two had conducted research on competency development, two focused on curriculum development, and one focused on evaluation methods. The range of congruence for each item was from .60 to 1.0, with an average of .71, above the .50 minimum level of acceptance. A pilot study was conducted with nurse preceptors who had a similar nursing background. The Cronbach's alpha coefficient for internal consistency was 0.81.

Data analysis

All data were analyzed using IBM® SPSS® software version 16. Descriptive statistics were frequencies, percentages, means, and standard deviations.

RESULTS

Components of nursing student preceptors' competency

In the respondents' opinion, all seven components of nursing student preceptors' competency are important and should be used (Table 1). Mean scores were high

on the level of agreement, ranging from 4.3 to 4.5 on a 5-point scale with negligible variation across the components by standard deviation. Clinical nursing expertise had the highest level of agreement as a component of nursing student preceptors' competency followed by teaching-learning, communication and relationship.

There were slight differences in the level of agreement on whether nursing student preceptors needed improvement in each of the seven components of preceptors' competency. Mean scores on level of agreement ranged from 4.2 to 4.4 on a 5-point scale with no variation across the components (SD = 0.7). There was a small gap between the importance of clinical nursing expertise and whether there was a need for improvement. The highest need for improvement was for role modeling and ethics. The lowest was for being supportive of students' learning.

Indicators of nursing student preceptors' competency

Respondents rated high the three indicators of competency for clinical nursing expertise (Table 2). This was followed by two indicators for role modeling and ethics: one indicator for communication and relationship and one indicator for leadership. Although considered a high level of agreement on 5-point response scale, the consistent lower levels of agreement were the three indicators for teaching-learning. This was followed by two indicators of being supportive of students' learning.

Learning methods related to nursing student preceptors' competency

Participants were asked of the required learning methods needed to develop each competency. Participants identified the learning method they preferred for each of

Table 2. Levels of agreement on primary indicators of nursing student preceptors' competency.

Components and indicators of nursing student preceptors' competency	Mean*	SD*
1.Teaching-learning,		
Giving constructive feedback	4.2	0.6
Appropriate teaching method	4.2	0.6
Individualized teaching	4.2	0.6
2.Being supportive of students' learning		
Identifying preferred knowledge source	4.2	0.7
Helping students to adapt	4.3	0.6
Co-operation between nursing students, institutions, and hospitals	4.2	0.6
3. Clinical nursing expertise		
Using of nursing process	4.4	0.6
Expert clinical care	4.4	0.6
Appropriate diagnoses and intervention	4.4	0.6
4. Communication and relationship		
Effective communication	4.4	0.6
Effective relationships	4.3	0.6
Clear expression of words	4.3	0.6
5. Role modeling and ethics		
Enthusiastic	4.3	0.6
Making impression		
Positive attitude	4.4	0.6
Ethics	4.4	0.6
6. Being accessible for consultation		
Analyzing needs of new nurses	4.3	0.7
Using reflection to show empathy	4.3	0.6
Giving counsel	4.3	0.7
7. Leadership	4.3	0.6
Leadership in nursing team	4.4	0.6
Time management	4.3	0.6
Motivating collaboration with the team	4.3	0.7
Fighting for human rights	4.3	0.7

* All values were rounded to one decimal place.

the seven components of nursing student preceptors' competency (Table 3). Classroom training was identified in all of the seven components of nursing student preceptors' competency as one of the top three learning methods. On-the-job training was in the top three learning methods out of the five components; network learning/ sharing experience was similarly ranked in four components. Site visiting was ranked in the top three learning methods of preferred learning for three components. Case study and group discussion were listed in the top three learning methods for a single component.

DISCUSSION

This research study explored how nursing students' competencies and learning methods could provide guidance to those seeking how to educate nursing student preceptors by developing training programs. The study's findings strongly support the seven components of nursing student preceptors' competencies. The role of nursing student preceptors encompasses imparting knowledge and experiences by using appropriate teaching and learning methods. This requires leadership

Table 3. Learning methods associated with components of nursing student preceptors' competency.

Components of competency	Learning methods									
	Classroom training	On- the- job training	Site Visits	Lecture	Brain-storming	Group Discussion	Case study	Self study/e-learning	Network learning	Learning though reflection
	n	n	n	n	n	n	n	n	n	n
	%	%	%	%	%	%	%	%	%	%
Teaching-learning	108	80	68	51	57	39	84	51	119	58
	37.1	27.5	23.4	18.2	19.6	13.4	28.9	17.5	40.9	19.9
Communication and relationship	74	56	64	43	32	69	36	39	95	58
	25.4	19.2	22.0	14.8	11.0	23.7	12.4	13.4	32.7	19.9
Clinical nursing expertise	108	125	87	42	32	30	80	56	72	40
	37.1	43.0	29.9	14.4	11.0	10.3	27.5	19.2	24.7	13.8
Being supportive of Students' learning	58	58	81	57	59	57	19	30	57	33
	19.9	19.9	27.8	19.6	20.3	19.6	6.6	10.3	19.6	11.3
Role modeling	92	75	73	50	44	46	31	33	69	55
	31.6	25.8	25.1	17.2	15.1	15.8	10.7	11.3	23.7	18.9
Consultation	94	66	41	49	51	58	54	43	88	52
	32.3	22.7	14.1	16.8	17.5	19.9	18.6	14.8	30.2	17.9
Leadership	126	70	55	51	53	60	56	57	75	47
	43.3	24.1	18.9	17.5	18.2	20.1	19.2	19.6	25.8	16.2

Note: Bold percentages indicate the top three rankings of preferred learning activities. "Being supportive of students' learning" has four preferred activities.

with nursing students, often in a consultative role. Nursing student preceptors should have clinical nursing expertise in their clinical practice to role model nursing skills to nursing students.

To develop a training program, educators recognize that the variety of possible learning methods makes it cumbersome to apply all possible methods for each competency. The findings show that the constituents surveyed in this study have preferences (Table 3). This may be a model for future program development. For example, learning method for preceptor trainees to achieve a competency in teaching and learning could include visiting a nursing college/school/ faculty to speak to instructors for shared experiences on how to teach and give constructive feedback. This would be by using network learning, site visits, and case studies. Classroom training would focus on the topic of education theories, learning styles of nursing students, and how to develop a lesson plan.

When deemed ready by a mentor, the preceptor trainee would move to on-the-job training with supervision in real situations and hospital setting. Indicators of knowledge acquisition by preceptor trainees could be assessed by using 15 to 20 multiple choice test items. The time allocated for learning methods may be judged subjectively based on the importance of selected contents and the logistical practicalities associated with the methods. Each developer of a program can judge the appropriateness of time and conduct formative and summative program evaluation which can be

modified for future programs.

In a similar manner, program developers can examine the desired learning activities for the remaining competencies by referencing Table 3. A trained observer would assess the trainees' skills and attitudes by using a checklist during practice or simulation of giving constructive feedback and appropriate individualized teaching and role modeling. Other indicators of achievement could be the use of nursing process; the level of clinical nursing expertise in clinical care; the observed ability to solve problem and intervene effectively; the ability to identify a preferred knowledge source for information seeking (part of role modeling); assisting nursing students to adapt to a new situation; showing cooperation between institution, hospital, and nursing students. Other skills are the ability to analyze the needs of nursing students, using reflection to show empathy, ability to give wise counsel, effective time management. Giving impression to the students, displaying enthusiasm, showing a positive approach, showing leadership in the nursing team, motivating collaboration with the healthcare team, advocating for patients and human rights, and using ethical judgments are attitude indicators for assessment of role modeling and ethical behavior. A mentor can assess preceptor trainees' knowledge by multiple choice test items, observation and checklists, and nursing students' feedback. The use of dichotomous (yes-no) or 5 – 7 point Likert options of agreement can further assess levels of competency achievement.

A qualified nursing student preceptor can have a positive impact on nursing students during clinical practices (Carlson et al., 2009). The study's findings strongly support the seven elements of nursing student preceptors' competencies. The role of nursing student preceptors encompasses imparting knowledge and experiences by using appropriate teaching and learning methods. This requires leadership skills and a supportive relationship with students. Nursing student preceptors are to have clinical nursing expertise in their clinical nursing practice to teach clinical skills to students. This enables nursing students to learn how to apply those experiences from practice to real situations (Canadian Nurses Association, 2004; NMC-UK, 2008; Pasasawat and Srisathitnarakul, 2011). Creative competency is an effective method for maintaining and monitoring skill and attributes of people in an organization (Thompson, 2015).

Most nursing student preceptors undertake orientation for years and require more updated knowledge, as well as improved requisite. In the survey of the nursing student preceptors in Practicum Placements of Udornthani, 80.8% of participants showed the need to improve their competency (Punyathorn, 2009).

Developing the program for improving the competencies of nursing student preceptors entails obtaining data from opinion survey on the needs and development of preceptors' competency from stakeholder groups based on the context of the nursing student preceptors. Each competency needs diverse methods for improvement. That means in one competency there are many methods to make the preceptors have knowledge skill and attributes in their job because they may have different learning styles and learning objectives.

Conclusion

The strength of studying competencies and learning activities to develop training programs to improve preceptors comes from an examination using actual constituents that would be most affected by the program. The program may be clinical and educational settings where there is an identified need.

Limitation of the study

It was difficult to search for data on specification of nursing student preceptors' competency. New nurse preceptors' competency was studied in this research

RECOMMENDATION FOR FUTURE RESEARCH

Further work should be on the effectiveness of nursing student preceptors' competency indicators and program evaluation by comparing the effectiveness of each learning method or activity. The validity of the methods will change over time with technology advancements, and changes in life style.

Conflict of Interests

The authors have not declared any conflicts of interest.

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Between the two hemispheres of the brain, structural and functional differences are called cerebral lateralization that can affect the skill performance of both arms in a different way, which is called handedness. Approximately 90% of people is right-handed and they use the right hand for most skillful activities. Interestingly, recent studies especially on musicians show that this difference is less in musicians than in non-musicians and musicians have better skillful performance compared to non-musicians in hand skill task. However, there is no study with the arms performance stated if this also depends on the type of playing instruments. Thus, the purpose of this study was to search if playing different kind of musical instrument, string and piano, can alter the arm asymmetry. Besides, it was also questioned whether string and piano players overall have less asymmetry compared to non-musicians. 30 right-handed participants from three groups (10 from each group) took part and were asked to reach one of three targets in front of them with either right or left arms. Their movements accuracy and linearity were analyzed by electromagnetic movement tracker system (please see method section). As a result, similar results were obtained with previous studies. A significant difference was not seen in the use of arms of musicians who play piano and string instruments. On the other hand, it was found that musicians make use of their arms better compared to non-musicians with their both arms. Thus, playing musical instrument can decrease the arm asymmetry regardless of the type of the instrument.

Key words: Interlimb difference, lateralization, arm asymmetry, musicians.

INTRODUCTION

The human brain is composed of two parts, namely the right and left hemispheres. Structural and functional difference between the two hemispheres of the brain is called cerebral lateralization. A hemisphere is heavier than the other anatomical cerebral lateralization, while handedness is considered as a functional cerebral lateralization (Yıldırım and Dane, 2007). These two hemispheres are specialized to control different aspects of activities. Left hemisphere tasks are controlling of the right side of the body, using right hand, verbal thinking, mathematic, speaking etc., while right hemisphere tasks are using left hand, singing, visuospatial movements, creativity, emotional reactions and dancing (Tarman, 2007). Although, two hemispheres with different tasks, a single brain that is doing completely accurate all of works. Corpus callosum provides this. Corpus callosum is a wide

neural fibers consisting of neural networks that connect information between the two hemispheres of the brain. It connects the left and right cerebral hemispheres and provides inter-hemispheric communication.

The corpus callosum supports information transfer between the two cerebral hemispheres while the planum temporal is crucial to language and music processing (Wilson, 2013). Many studies (Schlaug et al., 1995; Ozturk et al., 2002; Schmithorst and Wilke, 2002; Lee et al., 2003; Norton et al., 2005; Hyde et al., 2009; Schlaug et al., 2009) have shown the structural differences of corpus callosum of musicians. Moreover, numerous studies (Elbert et al., 1995; Zatorre et al., 1998; Evers et al., 1999; Schlaug, 2001; Gaser and Schlaug, 2003; Norton et al., 2005; Hyde et al., 2009; Gentner et al., 2010) have pointed those structural and/or functional differences on the musician's brain. Overall, these studies find out connections between specialized skills and specific brain structures on musicians.

According to Norton et al. (2005), musical performance demands complex cognitive and motor operations. Musicians must translate music notation (visual–spatial–temporal information) into precisely timed sequential finger movements involving coordination of both hands, recall long passages, bring meaning to music through the use of dynamics and articulation, transpose pieces to new keys, and improvise melodies and harmonies based on existing musical pieces. Besides, playing a musical instrument typically requires the simultaneous integration of multimodal sensory and motor information with multimodal sensory feedback mechanisms to monitor performance (Gaser and Schlaug, 2003). Feedback interactions are particularly relevant in playing an instrument such as a violin, or in singing, where pitch is variable and must be continuously controlled (Zatorre et al., 2007).

Every musical instrument playing requires some particular movements. For example, when you play piano both of your arms move horizontally. However, when you play string instruments, one arm moves horizontally, other arm moves vertically. Hyde et al. (2009) found effects of piano training on the primary motor hand area and on the corpus callosum, which were related to performance on a motor sequencing task, thereby again demonstrating the behavioral relevance of the observed cortical changes (Herholz and Zatorre, 2012). On the other hand, playing string instruments implies motor skills including asymmetrical interlimb coordination. Moreover, a recent study has been also showed that participating long-term sport training can also improve interlimb coordination and decrease asymmetry between arms (Akpinar et al., 2015).

Especially for a few decades, it can be seen an increase in the studies on musicians' brain. Important parts of this works are carried out upon the skills of musicians. Of course, hand and arm skills such as motor skills have been first examined elements. In recent years, the impact on the motor skills of the musicians of the human brain has proven with various experiments. For instance, Jäncke et al. (1997) stated that keyboard instrument players displayed an increased tapping performance for both hands compared to string instrument players. However, string and keyboard instrument players displayed the similar performance of hand performance asymmetry (writing and drawing speed) and both groups performed better than non-musicians. Regarding Jäncke et al. (1997)'s study, they found a significant difference between string and keyboard instrument players in a specific task (tapping task) but not in a daily life task (writing and drawing speed) and they just tested the hand performance. In this current study, the aim of the study was to test the arm asymmetry between string and keyboard instrument players in a basic reaching task and also compare it with the non-musicians. Based on the previous study by Jäncke et al. (1997), it was hypothesized that there should not be a significant arm asymmetry differences between string and keyboard instrument players, but both musician groups should demonstrate less arm asymmetry compared to non-musicians.

METHOD

Participants

In the study 30 subjects who participated were divided into three groups: 10 string instrument players (SP-Group A) (5 female-5 male, M_{age} = 22.3 SD = 1.7 years), 10 piano players (PP-Group B) (5 female-5 male, M_{age} = 23.7 SD = 1.9 years), and 10 non-musicians (Group C) (5 female-5 male, M_{age}=19.5 years, SD: 1.4) voluntarily participated in this study. All participants across all groups reported right-handedness and scored above 70% on the widely known Edinburgh Handedness Inventory (Oldfield, 1971). All participants were recruited from Nevşehir Hacı Bektaş Veli University. Musicians were recruited from Department of Music; non-musicians were recruited from Faculty of Education.

Musicians in the two groups (SP and PP) were individually matched at least 5 years of musical experience and formal training. The exact nature of the experiment aim was explained to each voluntary participant.

Experimental Setup and Design

The participants were seated at the table with sensors of the electromagnetic movement tracker (TrackSTAR, Ascension Technology, USA) which is attached to their right and left forearm depending on the measured arm (Figure 1). This system has been used in many studies (Yong et al., 2015; Korshoj et al., 2014; Przybyla et al., 2012) and has an accuracy rate of 1.4 mm root mean square (RMS) and 0.5 degrees RMS (TrakSTAR, Ascension Technology, USA). Thus, this system is valid and reliable to measure the human movements in both 2D and 3D. This seating arrangement make it possible to participant's reaching in the 2D horizontal space. A mirror covered participants' arms in the start position for each hand and targets were sent from 55" flat screen TV, which is ensured by PC software.

The cursor movements of participants' index finger and positions were updated on the screen in the real time with the update speed

Figure1. The Experimental setup.

of 100 Hz on the TV screen. At the same time, data of arm movements were saved at 100 Hz frequency.

The participants were asked to reach one of the three targets with three different directions which are 30°, 60°, and 90° (Figure 2). Although there were 3 targets, just one of them was displayed to the participant for each trial. The start position was shown as 2 cm diameter circle and placed 20 cm away from the mid of the body from the left or right side for each arm. Each target was shown as 3.5 cm diameter circle. The cursor was indicated as 1.6 cm diameter circle with cross hair simultaneously moving with the tip of index finger. For participants' reaching easily to the target, the distance between start and target point was limited to 30 cm. After participants positioned the cursor in the start circle for 300 ms, the audio-visual "go" signal was triggered and then the participants moved the cursor to the target. Each target was displayed earlier, after completing the previous trial, to allow participant to self-pace trial preparation by ensuring unlimited time for planning the movement. Participants had the chance to take a break during the experiment so that they could avoid from the exhaustion. This break was the same for all participants and was one minute in duration. Participants were asked to reach the targets with one arm in a session and then they were asked to carry out the movement by coming to the lab again to test the other arm in the other session. There was at least a week between the first and second sessions. The aim of this break between sessions was preventing the interlimb transfer.

Experimental task

Participants were asked to perform 60 reaching arm movements.
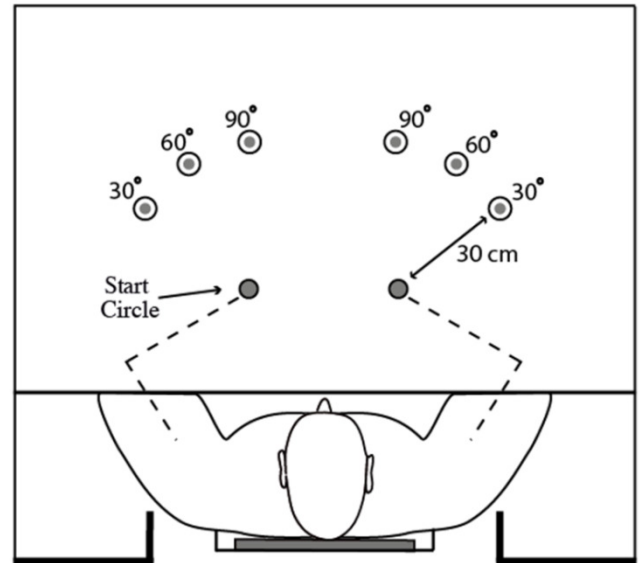
Figure 2. The experimental design.

They had 20 movements for each target from the start circle (2 cm in diameter) that represented starting position to target (3.5 cm in diameter), which were projected in randomized way. It was very important for participants to reach to the target rapidly while maintaining accuracy and stop on the target without any corrections. Trials were 1 s in duration and at the end of each trial there was a beep signal after the cursor (1.25 cm in diameter cross hair) was hold in the start circle for 0.3 s in duration. For increasing the motivation of the participants' accuracy was awarded with 10, 3 and 1 points for landing within 3.5, 4.5 and 5.5 cm diameter from the center of the target respectively.

Data analysis

In order to find out the quality of arm skill asymmetry across three groups, it was determined two dependent measures: 1-Movement accuracy (Final Position Error = FPE) and 2- Movement quality (Hand Path Deviation from Linearity = HPDL). The FPE was specified as the Euclidian distance between the center of the target and the 2D final position of the tip of the index finger. The HPDL was specified as the ratio between the minor and the major axis of the movement path of the index finger (arm path). The longest distance between any of two points on the arm path was specified as the major axis and the shortest distance perpendicular to major axis was specified as the minor axis. Matlab software was used to analyze the acquired data and then the accuracy and linearity of the each reaching movement were calculated.

In order to define whether the musicians have less arm skill asymmetry difference at one of three different targets compared to non-musicians or not, three-way mixed model ANOVA was used. For reporting the ANOVA, F test result was used with the partial eta squared (η^2). η^2 is the value to show the effect size of the analysis (Levine and Hullett, 2002). An inferential test may be statistically significant (i.e., unlikely to have occurred by chance), but this doesn't necessarily indicate how large the effect is. Thus, reporting the η^2 makes the results even stronger. Post-hoc analysis was carried by using Bonferroni adjustment. Statistically significant level was determined as $p < .05$. If this value is above .05, it means that there is no significant difference between the variables but if the p value is below the .05 then there is a significant difference.
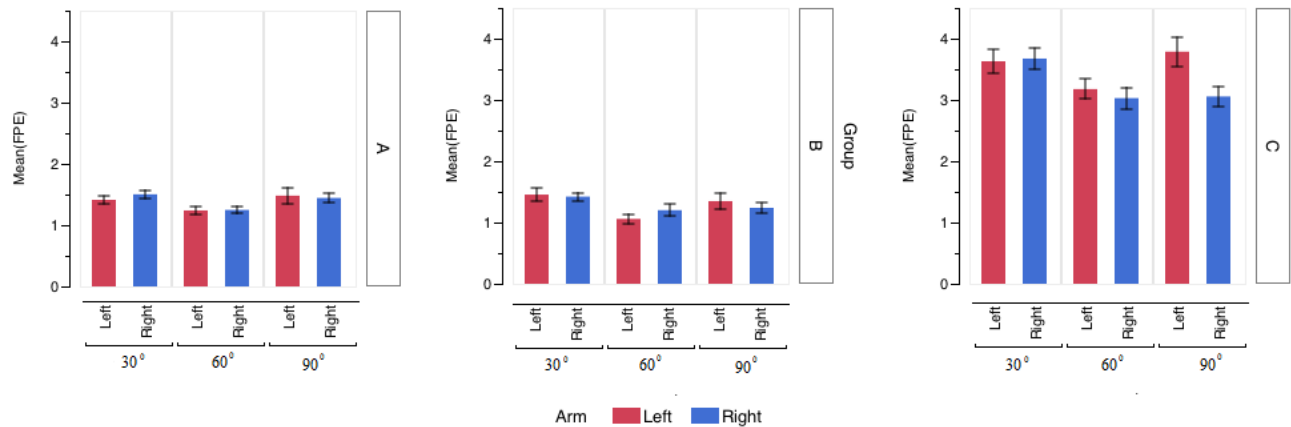
Figure 3. FPE between musicians (SP and PP) and non-musicians across three different targets.
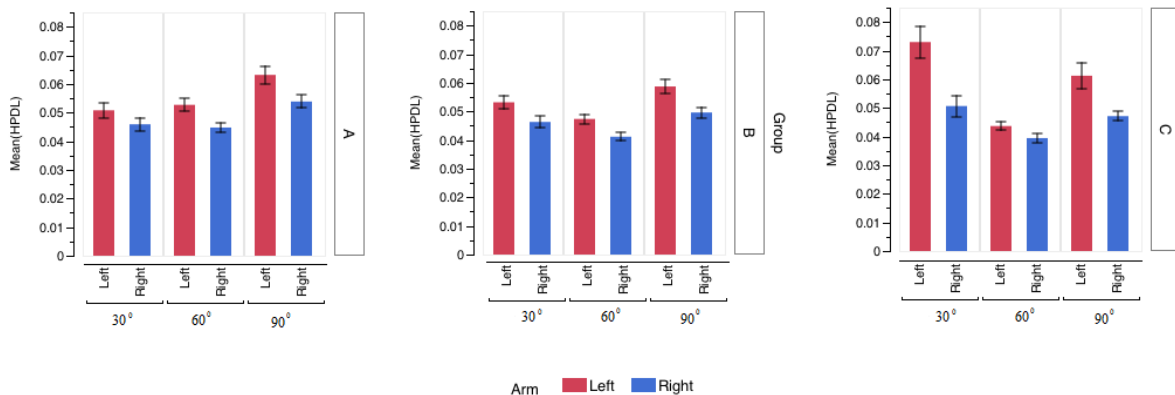
Figure 4. HPDL between musicians (SP and PP) and non-musicians across three different targets.

RESULTS

In this section, quantitative results according to their applied rank are presented. Firstly, both groups, musicians (SP and PP) and non-musicians, made reaches to the three different targets located across horizontal space in front of the body with the right and the left arm. Figure 3 shows the average magnitude of the FPE for each target for the right and the left arm across musicians (SP and PP) and non-musicians. The result of the statistical analysis for the FPE displayed a significant three-way interaction, Group x Arm x Target Region, $F (2, 27) = 3.28$, $p = .04$, $\eta^2 = .22$. Post-hoc analysis displayed that left arm of musicians (SP and PP) had better accuracy for targets located in 30° , 60° and 90° compared to same arm of the non-musicians ($p < .05$). The same pattern was also observed for the right arm ($p < .05$). Whereas there was no significant accuracy difference between SP and PP for all targets on the left and right arm. However right arm displayed better accuracy performance than left arm for 90° target among non-musicians was significant difference.

Secondly, Figure 4 shows the HPDL across musicians (SP and PP) and non-musicians. The result of the statistical analysis for the HPDL displayed a significant two-way interaction, group x arm, $F (2,27) = 3.04$, $p = .05$, $\eta^2 = .15$ and a significant Arm main effect, $F (1,27) = 16.23$, $p = .0004$, $\eta^2 = .65$. The main effect of arm showed that right arm overall had straighter reaches compared to left arm. Post-hoc analysis for Group x Arm interaction displayed that there was only a significant difference in non-musicians between their right and left arm ($p < .05$). As expected, right arm of non-musicians had less linearity than that of left arm. All the other comparisons did not show any significant differences.

DISCUSSION AND CONCLUSION

The main finding of this research is that musicians'

accuracy data exhibited a reduced degree of arm skill asymmetry in comparison to non-musicians. On the other hand, there is no significant difference in linearity data between musicians and non-musicians. Moreover, when compared to string players (SP) and piano players (PP) there was no significant difference for all targets on the left and right arm both in accuracy and linearity. That is, SP and PP displayed the similar performance in the reaching task. Whereas both SP and PP displayed similar performance in the hand path deviation linearity with non-musicians, they had better accuracy than non-musicians.

It is uncertain which instrument more affects arm skill asymmetry. However, it can be said that playing a musical instrument performs secondary tasks better than non-musicians of both arms. In addition to that, there is a widespread view that playing a musical instrument should develop some skills (Rodrigues et al., 2010; Brochard et al., 2004, Norton et al., 2005). In the current study, the similar results were found. That is, both musician groups displayed better accuracy compared to non-musicians. This could be explained by some neurophysiological findings. It has been stated that musicians started to train music at young ages have been shown to have enlarged brain areas (Elbert et al., 1995; Pantev et al., 1998; Schlaug, 2001).

Moreover, degree of structural and/or functional brain differences between musicians and non-musicians related with density of musical training (Schneider et al., 2002; Gaser and Schlaug, 2003; Hutchinson et al., 2003).

It is currently still not clear if music training may improve cognition with the consequence of the attention, motivation, concentration, and discipline. On the other hand, music training could possibly have some specific effects which other forms of training do not have. As stated earlier, cognitive improvement through music training might be because of the particular kind of skills required by music study; for example, memorizing prolonged passages of music, learning music structures and rules, learning to make fine auditory spectral and temporal discriminations, and learning to perform skilled bimanual finger movements (Norton et al., 2005).

Otherwise according to Jäncke et al. (1997) it is ambiguous whether the altered hand skill asymmetry in musicians influences hand preference as measured by standard preference tests. Right handed musicians might exhibit a tendency to perform "secondary tasks," such as unscrewing a lid or dealing cards, more often with the non-dominant hand due to their increased left-hand skills. Jäncke et al. (1997) had two main findings; keyboard instrument players displayed better performance in tapping task compared to string instrument players, which was not surprising as this task was more familiar for them, and no differences between those two groups in writing and drawing task. In this current study, there was no significant difference between SP and PP for accuracy and linearity during the reaching task. The task used in this study is similar to a daily reaching task, like reaching

a glass or reaching to pick a pen. Thus, it is not specific for any group of musicians. As Jäncke et al. (1997) found no difference in daily life task (writing or drawing) between those groups of musicians; the finding of this current study is in agreement with those researchers findings.

Consequently, musicians who play an instrument at least 5 years use both arms better compared to non-musicians according to movements accuracy but not linearity.

Thus, it can be stated that playing both string and piano can decrease arm asymmetry and improve both arm performance, especially accuracy.

Conflict of Interests

The author has not declared any conflicts of interest.

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Educational Research and Reviews

Full Length Research Paper

Organizational ımage perceptions of higher education students

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Colleges and universities rely on their image to attract new members. Organizational image is the total of thoughts, emotions and perceptions resulting from clear conclusions of information formed in the minds of stakeholders as a result of communication with the institution about that institution and its elements. The purpose of this study is to determine if the organizational image of university changes according to the gender, programme, academic achievement and socio cultural activities based on the opinions of the students at Education Faculty. The method is a descriptive model research as it measures organizational image of the participants of the research in a specific moment. The population of the study consisted of a total of 5660 students in the spring semester of the 2013-2014 academic year. The sample of the study was 3850 (%68) students studying at the Education Faculty of Uludag University, chosen by random sampling. The instrument was composed of two sections, included the Personal Information Form that was prepared to collect personal data and second section included 60 items aiming to determine the university's organizational image perception. ANOVA, Mann Whitney- U and Kruskall Wallis were used for the data analysis. The organizational image perceptions were varied according to the gender, programme, socio cultural activities and academic success levels of students at each subscale. The organizational image level of the university was "moderate" (X=2.62; sd=0,56) according to education faculty students' perceptions. The students perceived the "general view and physical infrastructure" (X=2.15) and provided services (X=2.45) at very low level. However "educational quality" (X=2.78) and "social responsibility" (X=3.15) at moderate level. When gender and academic success was taken into consideration, there was not any significant difference between students' organizational image perceptions. However for programme and socio cultural activities meaningful significant difference was found. According to the results obtained, in order to upgrade organizational image perceptions of education faculty students, univerity management is required to take the necessary measures.

Key words: Organizational image, perceptions, higher education, students, university.

INTRODUCTION

Today, one of the most important factors affecting the field of higher education is that the competition is gradually becoming globalized in every field. Global competition has become an element of pressure on universities

becoming competitive and increasing their organizational performance both at national and international levels while reviewing themselves in terms of goals, structure, process and outputs and brings new initiatives about how universities should be managed (Flavian et al., 2005). Circumstances in Turkey as many other Euroepean countries, such as financial restrictions, changes in the youth population and their requests, student exchange programmes via Erasmus+, adaptability to the Bologna requirements and quality certification, the increasing number of private universities force almost all univerisites to rearrange their structures and the incorporeal image is a key resource for this purpose. Although universities share some characteristics with their corporate peers, the nature of their business is very different and they do not function under the same parameters (Cerit, 2006; Lewison and Hawes, 2007; Luque-Martinez and DelBarrio-Garcia, 2009). For this reason, this article focuses on perceptions of the students' –the primary stakeholders- internal image of Uludağ university and made some recommendations for the university managers.

Image is commonly considered to be an immediate, more short-term, external stakeholder perception founded on impressions and attitudes toward the organization (Scott and Jehn, 2003; Veloutsou et al., 2004; Brown et al., 2006; Heding et al., 2009). However, organizational image can be defined as the sum of the quality of products and services produced, activities organized and successes achieved by an organization since its establishment until present day, and behaviors in the member-manager relations, relations with the environment and responsibilities felt against the society, personal experiences about the organization, people's level of being informed about the organization, intra-organizational communication, people's experience and works and effects left by the organization on the target audience (Arpan et al., 2003; Roberts, 2005; Melewer and Akel, 2005; Paden and Stell, 2006; Chandler et al., 2007; Tasci & Gartner,2007; Alves and Raposo, 2010). Karaosmanoglu and Melewar (2006:198) define organizational image as, "the set of meanings by which an object is known and through which people describe, remember, and relate to it. That is, it is the net result of the interaction of a person's beliefs, ideas, feelings, and impressions about an organization at a particular moment in time". Organizational image does not only develop based on tangible and physical elements related to appearance, but it is also affected by visual, auditory and behavioral elements.

In university administration decisions, it is important to consider image as representations of reality among faculty and students because that universities spend serious amounts of resources to increase their quality and images. To create a successful image, it is necessary to ask organization stakeholders for their comments and determine a communication strategy accordingly. If an organization does not follow its stakeholders continuously and receive feedback regularly at appropriate times and become unsuccessful, it is nearly impossible to create a desired image in stakeholders. Starting from here, it can be stated that university administrators should determine the current image and follow it continuously. It is observed that interest in studies on the organizational images of universities has been gradually increasing starting from the 1990s on both outside such as how institutional image is received and negotiated by audiences (Kazoleas et al., 2001; Ivy, 2001; Arpan et al., 2003; Melewer and Akel, 2005; Paden and Stell, 2006; Chandler et al., 2007; Sung and Yang, 2008; Heding et al.2009; Luque-Martinez&DelBarrio-Garcia, 2009); how institutional image influences college selection (Nguyen and LeBlanc, 2001; Palacio et al., 2002; Cubillo et al., 2006; Pampaloni, 2010); and the impact of institutional image on student satisfaction (Helgesen and Nesset, 2007; Alves and Raposo, 2010) and inside Turkey (Saracel et al., 2001; Ors, 2003; Bakan and Buyukbese, 2004; Cerit, 2006; Orer, 2006; Erkmen and Cerik, 2007; Polat 2011).

For the last two decades, the higher education sector in Turkey, similar to as happened in the USA and other European countries, has experienced quite profound changes. As a result, higher education institutions have been left no choice but to give service in a cutthroat market and with decreasing economic resources and, while giving this service, meet the expectations of potential teaching staff members and students giving their choices more rationally at maximum level. In Turkey, a great majority of higher education activities has undertaken by state universities. However, the number of private universities is increasing rapidly. In an increasingly competitive environment and meet the demands of parents and students quality protect, it has become a necessity for higher education organizations to measure their image and be to ascertain how the constructed image is formed and how it can be modified in order to better reflect the intended image. People make up their thoughts about the organization greatly as a result of their interactions with the organization. For institutions of higher education, image is important because it helps create a positive view of the organization, which determines if potential members are attracted enough to want to become affiliated (Pampaloni, 2010:21). For this reason, in the determination of the organizational image level of an organization, it is necessary to get information from all stakeholders who are in intensive reltionship with the organization. From these stakeholders, we have selected the student as the focus of this article. The reasons for this selection, apart from their primary and internal character, students represent a group with great influence capacity and repercussions on the other groups. It is important then for institutions to understand what students desire and expect from the institution they

chose.

Purpose of the study

The purpose of this study is to determine organizational image of the university based on the Education Faculy students' views. For this purpose, answers were sought for the following questions:

1. At what level are the organizational image perceptions of the students in relation to the university?
2. Do students' perceptions of organizational image change significantly according to their gender?
3. Do students' perceptions of organizational image change significantly according to their being day classes (morning shift) or evening classes (night shift)?
4. Do students' perceptions of organizational image change significantly according to their academic grade point average (GPA) scores?
5. Do students' perceptions of organizational image change significantly according to their participation in socio cultural activities ?

The limitation of the this study is that it focused solely on undergraduate students' perspective studying at education faculty of Uludag University.

METHODOLOGY

Sample and population

As this is a descriptive research for it measures the image perceptions of the participants at a single time, quantative research methods were used. The population of the research was education faculty students at Uludag University in Bursa. The population of the study was consistent of a total of 5660 students in the spring semester of the 2013-2014 academic year.

Randomly selected 3850 undergraduate students (%68) who provided anonymous responses were the sample of the study. 73.29% (n=2822) of the group was composed of females and 26.60% (n=1028) of males. 63.25 % (n=2435) of the students are attending regular day classes whereas 36.75% (n= 1415) is attending evening classes. The academic grade point avarege scores of the students varied considerably. 9.76% (n=376) of the students have 1.99 or lower. 32.41% (n=1248) have GPA between 2.00-2.99, 42.25% (n=1627) have 3.00-3.49 and 15.55% (n=599) have 3.50 and 4.00. More than ¾ of the students (n=3178) do not participate in any socio cultural activities and a member of a student social union or club at the campus; however 17.45% (n=672) of the students do.

Data collection

The organizational image perceptions of the students at education faculty in relation to the university were determined through an instrument developed by the researcher with the aim of measuring images of higher education institutions and by taking into consideration the related literature (Kazoleas et. al., 2001; Pampaloni,

2010; Polat, 2011) and the unique dynamics of Uludag University. When preparing the instrument it was examined by a specialist group of 8, composed of three teaching staff members, 61 students and the researcher in terms of readability, understandability and grammar; then it was revised and necessary corrections were made. After having evaluated the items in the data collection instrument one by one in the direction of the specialists' opinions, necessary modifications were made and the instrument was made ready to use. The instrument was composed of two sections. The first section included the Personal Information Form prepared to collect personal info about the students and the second section included 60 statements aiming to determine the organizational image perception of the university.

To measure the organizational image 5-point Likert type with 1 being 'strongly disagree'and 5 being 'strongly agree,'grading was used. In the study, in order to determine the factor structure, the exploratory factor analysis technique was used. Moreover, for the whole of the scale, the Cronbach's Alpha reliability coefficient was determined to be $\alpha=.921$. Furthermore, the factor loads of the items included in the scale were calculated through using the varimax method and they were found to vary between $\alpha=.62$ and $\alpha=.84$. Although in the factor analysis employed the image scale was gathered under 8 dimensions, in this study 4 of the sub dimensions were examined. These are I.general view and physical infrastructure ($\alpha=.871$) II.provided services ($\alpha=.925$) III.educational quality ($\alpha=.786$) and IV.social responsibility ($\alpha=.902$).

Data analysis

In order to determine the image perception of the students, a mean analysis was carried out. When interpreting means, the intervals were taken as 1.00-1.79 "very low", 1.80-2.59 "low", 2.60-3.39 "moderate", 3.40-4.19 "high", 4.20-5.00 "very high". ANOVA, Mann Whitney-U and Kruskall Wallis tests were applied. The significance of the difference between the groups was looked into through Tukey HSD and Levene tests.

RESULTS

According to the students of the Education Faculty, the organizational image of university was at "moderate" level (X=2.62; sd=0,56). The students perceived the "general view and physical infrastructure" sub-dimension of the organizational image belonging to the university at the lowest level (X=2.15; sd=0,81), and this was followed, in order of frequency, by the images of, "provided services" (X=2.45; sd=0,67), "educational quality" (X=2.78; sd=0,79), "social responsibility" (X=3.15; sd=1,12) (Table 1).

No significant difference was found between the female and male students' organizational image perceptions [U=3601,2; p>0.05] related to the university. In the sub-dimensions of general view and physical infrastructure [U=1678, p=.295], educational quality [U=1617, p=.056] and provided service [U=1534, p=.071] there is not a meaningful significance among male and female students. However on social responsibility there is a meaningful significance among male students [U=1531,5 p=.032]. Males (X=3.51) have more positive image perception than females (X=3.21).

Table 1. Organizational image and gender.

	Scale	Gender	n	X	U	p
Sub dimensions	Organizational image	Female	2822	2.57	3601,2	.064
		Male	1028	2.77		
	General view and physical infrastructure	Female	2822	2.18	1678.0	.295
		Male	1028	2.46		
	Educational quality	Female	2822	2.85	1617.0	.056
		Male	1028	2.54		
	Social responsibility	Female	2822	3.21	1531.5	.032
		Male	1028	3.51		
	Provided service	Female	2822	2.86	1534.0	.071
		Male	1028	2.67		

Table 2. Organizational image and programme.

	Scale	Programme	n	X	t	p
Sub dimensions	Organizational Image	Day Class	2435	3.34	1.318	.039
		Evening Class	1415	2.17		
	General view & Physical Infrastructure	Day Class	2435	3.14	2.393	.018
		Evening Class	1415	2.11		
	Educational Quality	Day Class	2435	2.87	2.492	.014
		Evening Class	1415	2.46		
	Social Responsibility	Day Class	2435	2.87	1.776	.005
		Evening Class	1415	2.34		
	Provided Service	Day Class	2435	2.46	2.860	.023
		Evening Class	1415	2.09		

A meaningful significant difference $[t(3849)=1.318, p<0.05]$ was found between the day and evening class students' organizational image perceptions related to the university. In the sub-dimensions of general view and physical infrastructure $[t(3849)=2.393; p=.018]$, educational quality $[t(3849)=2.492; p=.014]$, social responsibility $[t(3849)= 1.776; p=.005]$, provided service $[t(3849)= 2.860; p=.023]$ day class students perceive significantly more positive images (Table 2).

Since Levene Test indicated that there was not a significant difference between the variances of the score series of the GPA groups $[F=1.739, p>0.05]$, from the result of the one-way analysis of variance, it was determined that the GPA groups had no significant effect on general view and physical infrastructure $[F=1.136, p>0,05]$. On the other hand, the GPA factor had a significant effect on educational quality $[F=1.230, p<0,05]$.

According to Tukey multiple comparison test, the significant difference was found between the 2.00-2.99 mean (X=2,45) and the 3.00-3.49 mean X=2,90 [p=,021]. On social responsibility subscale $[F=1.224, p<0,05]$ the significant difference was found between the 2.00-2.99 mean (X=2,45) and the 3.00-3.49 mean (X=3,13) [p=,043]. On provided services subscale $[F=1.245, p<0,05]$. the significant difference was found between the 1.99 and lower mean (X=2,17) and the 3.00-3.49 mean (X=2,84) [p=,038] (Table 3).

A meaningful significant difference $[t(3849)=1.318, p<0.05]$ was found between the students who participate in social activities and the ones who do not. In the sub-dimensions of general view and physical infrastructure $[t(3849)=1.185; p=.000]$ the students who participate in social activities have more positive image perceptions (X=2.03). However on educational quality $[t(3849)=1.776;$

Table 3. Organizational image and GPA.

	Scale	GPA	n	X	F	p	
Sub dimensions	Organizational Image	1.99 andlower(A)	376	2.12	1.739	.617	
		2.00-2.99(B)	1248	2.48			
		3.00-3.49(C)	1627	2.93			
		3.50 -4.00(D)	599	3.21			
	General view and Physical Infrastructure	1.99 andlower(A)	376	2.30	1.136	.875	
		2.00-2.99(B)	1248	2.41			
		3.00-3.49(C)	1627	2.87			
		3.50 -4.00(D)	599	2.93			
	Educational Quality	1.99 andlower(A)	376	2.43	1.230	.021	B-D
		2.00-2.99(B)	1248	2.56			
		3.00-3.49(C)	1627	3.18			
		3.50 -4.00(D)	599	2.90			
	Social Responsibility	1.99 andlower(A)	376	2.05	1.224	.043	B-C
		2.00-2.99(B)	1248	2.45			
		3.00-3.49(C)	1627	3.13			
		3.50 -4.00(D)	599	3.21			
	Provided Service	1.99 andlower(A)	376	2.17	1.245	.038	A-C
		2.00-2.99(B)	1248	3.01			
		3.00-3.49(C)	1627	2.84			
		3.50 -4.00(D)	599	2.78			

p=.009]; social responsibility [t(3849)=1.591; p>.007]; and provided service [t(3849)=1.096; p=.004] the students who do not participate in social activities have more positive perceptions about the university image (Table 4).

DISCUSSION

The main results obtained from this research is that the organizational image of university is measurable. The results yielded that the perceived organizational image of Uludağ University is moderate among education faculty students. Of the image dimensions, general view and physical infrastructure and provided services were perceived "low"; while educational quality and social responsibility images were perceived "moderate".

Although gender did not cause a significant difference in total organizational image perception, general view and physical infrastructure and educational quality subscales the male had higher perception than the female. On provided services subscale the female had higher perception. However on social responsibility subcale male students had significantly more positive image perceptions than the female students. Organizational image perceptions did not show any statistically significant differences by gender similarly, in the studies made by Uğurlu and Ceylan (2013) and Cerit (2006). However, Sisli and Kose (2013) found out that male students have significantly more positive perceptions of organizational image towards their university where as in Polat's (2011) and İbicioğlu's (2005) studies female students share more positive perceptions.

The programme that the students attend was very important. Both on total scale and at all subscales students' perceptions of organizational image showed a general tendency to decline on every sub dimension at evening programme students. This is not a very surprising result for the university. Evening class students come to univeristy between 17:00 and 23:30. The level of interaction with the teaching staff, to get service from the other staff at the faculty, to benefit from the opportunities of university is very limited for the evening programme students. This suggests that the university is not able to present the same conditons for the evening programme students.

When academic success was taken into consideration, it was determined that the GPA groups had no significant effect on total scale and general view and physical

Table 4. Organizational image and socio cultural activity

	Scale	Participation	n	X	t	p
	Organizational Image	Yes	672	3.64	1.023	.002
		No	3178	2.61		
Sub dimensions	General view and physical Infrastructure	Yes	672	2.03	1.185	.000
		No	3178	1.86		
	Educational Quality	Yes	672	2.14	1.776	.009
		No	3178	2.34		
	Social Responsibility	Yes	672	1.97	1.591	.007
		No	3178	3.01		
	Provided Service	Yes	672	2.00	1.096	.004
		No	3178	2.47		

infrastructure subscale, whereas had a significant effect on educational quality, social responsibility and provided services. In all these three subscales the students who had higher GPA scores had more positive perceptions about the universities' organizational image. University image differ for each group of academic success. This finding corroborates the theoretical background whereby each group builds an image regarding its own interests and contacts established with the corresponding institution.

Another important finding of the study is that social responsibility caused a significant difference in perceived image between the students who participated in socio cultural activities and who did not at total and general view and physical infrastructure subscale. While the students who participated in socio cultural activities, student clubs and unions perceived image of university was higher, the case was just the opposite for the ones who did not participate in socio cultural activities. Moreover at educational quality, social responsibility and provided services subscales the students who never participated in socio cultural activities had significantly higher perceptions than the other students. Bolat (2006) cited universities attention to social responsibility is very influencial on organizational image. Also Helgesen and Nesset (2007) have found that university's contribution to the society via socio cultural avtivities and social responsibility projects is quite important on organizational image. Therefore, the universities are required to be in a healthy relationship with the community to create an impression that may be perceived in a positive way they. University administrators should meet the cultural needs with a variety of activities.

RECOMMENDATIONS

If higher education institutions have to compete through

image, the first step to take is to measure the university image held by its students. The results of organizational image studies have gained interest among policy makers and university administrators for planning, resource, allocation, budgeting, and even accreditation efforts. These measures should be taken to increase the quality of education.

Therefore, organizational image is perceived by internal and external stakeholders of the educational organization and implementation of relational and causal research on organizational image is recommended. The images were formed by students, will be effective in assessment related to the university. Therefore, universities are required to create a positive and strong image to perform their functions. As well as in other service areas a competitive environment is composed among universities. Due to the reduction of public funding to succeed in competition between educational organizations has become even more important. That competition reveals the necessity to develop different strategies except for teaching and research for universities. One of that strategy is to create a positive organizational image.

Physical infrastructure of schools can be improved and should be updated continually to keep up with changing conditions. Univerity managers should pay attention to the campus esthetic and social needs of their students. The service quality (education, accommodation, etc.) should be improved. Schools should participate more in social responsibility projects. Libraries, sports facilities and social facilities could be improved. The quality of staff should be improved. The corporate image of schools should be measured and evaluated continually; good image dimensions should be maintained and lacking dimensions should be improved.

Image management is fundamental to good governance of universities. It is therefore necessary to know the image that students have and know how that has been

built, knowing what attributes are used, and weights allocated. This study has identified these at one university. Based on the obtained models, other institutions might consider whether these attributes are those their students value and how they should address the building of their images.

Conflict of Interests

The author has not declared any conflicts of interest.

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Full Length Research Paper

The curriculum development for science teachers' training: The action lesson focusing on science process skills

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The objectives of this research were to develop innovation curriculum and study the effect of curriculum usage in science teachers' training in establishing the supplementary subject curriculum for action lesson. It focuses on science process skills with 10 teachers for 4 days, and 236 Grade 9 students from 10 schools during the first semester of 2014 academic year. It was done in the Office of Kalasin Primary Educational Service Area 3.   The research findings include : 1) the propriety of training program was in "High" level, 2) the teachers had knowledge in establishing supplementary training program; training, was significantly higher than the pretest at .05 level. The teachers were competent in establishing the supplementary subject curriculum (93.04%), in learning management (90.20%), passing the criterion (80%), and 3) in the science process skill of students in all of 10 schools, the posttest scores were significantly higher than the pretest scores at .01 level. In addition, the competency in experimentation of students from all of 10 schools, their mean scores passed the criterion.

Key words: Curriculum development, training program, supplementary subject curriculum, action lesson.

INTRODUCTION

The aim of science education is to enable individuals to use science process skills; in other words, to be able to define the problems around them, to observe, to analyze, to hypothesize, to experiment, to conclude, to generalize, and to apply the information they have with the necessary skills. These science process skills can be gained by students through certain science education activities (Aktamis and Ergin, 2008). However, the status of science education in Thailand is in a state of transition. Thailand has been identified in several studies as among the lowest-ranking countries internationally in science

education (Yuenyong and Narjaikaew, 2009). Stuessy (1993: 55) summarized the status well by stating: "Reformers in mathematics and science education are attempting to solve the problems of decreasing scores in indicators of mathematics and scientific literacy for the general population".

In Thailand, the science and technology curriculum aims to educate individuals who are aware of science concepts and principles affecting their life and also conscious of individual and social responsibilities. Educating scientifically literate individuals, however, is

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possible not through passing knowledge onto individuals, but through teaching them and enabling them to reach scientific knowledge. In this respect, the place of science process skills is prominent and important to teaching ways of reaching knowledge (Yuenyong and Narjaikaew, 2009). The students need the process skills both when doing scientific investigations and during their learning process (Karsli and Sahin, 2009). For these reasons, teachers and students should be informed about the importance of science process skills.

The most important thing for student development with expected quality was the teacher's quality, and quality of learning management and teachers' evaluation. Therefore, it was necessary to provide the training process for teachers to obtain knowledge and comprehension as well as competency in establishing the curriculum, learning management, and measurement and evaluation to work efficiently. It would be helpful and improve the students' learning as well as applying their knowledge and experience from the training in real work practice. In addition, it also served the educational reform policy of the Ministry of Education focusing on the changes in quality of new age Thais. So, the school, new learning sources, and administration and management system have to depend on development implementation in different processes associated with curriculum process, learning management, measurement and evaluation emphasizing on the students' quality improvement with full potentiality as well as teacher development for increasing the efficiency of learning management (The Office of Basic Education Commission, 2014: 1-3).

According to the research literatures in curriculum development of training program for teacher development, found that the teachers' training could help the teachers to increase their knowledge, expertise, confidence in learning management, good attitude towards leaning management, and competency in developing the professional progress (Bianchini and Solomon, 2002: 53-76). To develop the efficient training program, the development should be performed systematically including 3 cycles as follows: 1) the assessment phase, 2) the training phase, and 3) the evaluation phase (Fisher et al., 1996: 356-357), and teacher development by the training program development. The researchers implemented according to the approach of on the job training which was the process focusing on the learning as well as work practice in work office or nearby place for training place so that the trainees would be more competent in work practice (Jacobs, 2003: 12). According to the Ordinary National Education Test (O-NET), science subject of Grade 9 in 2011 academic year of the Office of Kalasin Primary Educational Service Area 3, we found that there was the low learning achievement since the national level, the mean value was = 32.19, the level of under jurisdiction of the Office of Basic Education Commission, the mean value was = 32.28, and the level

of Educational Service Area; the mean value was = 40.38. According to the mean values, it reflected the teachers' teaching quality (The Office of Kalasin Primary Educational Service Area 3, 2012: 88). Furthermore, the report of study in problem situation and need for developing the learning management of Science Teachers shown that the problem situation was in "Moderate" level, the mean value was = 3.50, and the need for development was in "High" level, the mean value was = 4.10 (The Office of Kalasin Primary Educational Service Area 3, 2012: 52). According to the rationale and reason of problem situation and need for teacher development, it was necessary to provide teacher development by workshop so that the teachers would have knowledge and comprehension in the curriculum, learning management, measurement and evaluation I Science subject, and competency in learning management in classroom truly which would accomplish the goal of educational standard and the policy of the National Educational Management further.

METHOD

Population and samples

Population included 58 science teachers, and 1,296 Grade 9 students of the Office of Kalasin Primary Educational Service Area 3.

Samples in experimentation of training program were 10 Science Teachers in Lower Secondary School, under jurisdiction of the Office of Kalasin Primary Educational Service Area 3 who volunteered to participate in the training. In addition, there were conditions for providing the supplementary subject curriculum in instructional management during the first semester of 2014 academic year.

Samples in experimentation of the supplementary subject curriculum in action lesson focusing on the Science Process Skill were 236 Grade 9 Students in 2014 academic year from 10 schools. They were selected by purposive sampling in the schools of the science.

Procedure

This research was to develop the Curriculum Development for science teachers' training in establishing the supplementary subject curriculum for action lesson focusing on science process skills. The three phases of were as follows:

Phase 1: the study of basic information

The study of basic information was the first phase of process in the Research and Curriculum Development including the following steps:

Step 1, the survey of problem situation

The survey aimed to collect ICT information from people regarding their thought, feeling, belief, need, and different aspects of background. Data collection could obtain obvious findings in necessary information for future planning (Kenneth and Bruce, 2011: 259).

The questionnaire was the instrument for surveying 58 science teachers in lower secondary school (the propriety of questionnaire was in "High" level ($\overline{X}$ = 4.50).

Step 2: Focus Group Discussion

The Focus Group Discussion involved collecting data by discussion with informants regarding specific problem. There were 6-10 informants selected from specified target population in studying their opinion, attitude, perception, belief, and behavior using for determining the different questions in Questionnaire in order to search for vague answers of the Survey Research of the Step 1. It was to make the research study to be more perfect. We were a moderator to create the issue for discussion so that the group would express their opinion extensively and intensively (Matthew and Caroll, 2011: 131-137). For this Focus Group Discussion, there were 10 experts in curriculum and learning management by using the Focus Group Record which the specific problem issues were specified (the IOC of Focus Group Record was = 1.00).

Phase 2: the Curriculum Construction

The construction of the curriculum development was the phase connected to the study of basic information including the following steps:

Step 1, the establishment of tentative curriculum

The tentative curriculum development was to determine the factors of tentative curriculum including the major factors as follows: the rationale and principle, objective, content, learning substance, activity, training process and activity, training media, and measurement and evaluation.

Step 2, the Investigation of Tentative Curriculum

The curriculum was outlined from necessary factors based on appropriate information and technique. The tentative curriculum was evaluated. In this study, the issues for evaluation were: the evaluation of the propriety of tentative curriculum by the 5 experts with educational degree or knowledge as well as experience in science curriculum by using the evaluation form of the propriety.

Step 3: the curriculum improvement before using

The curriculum improvement before trying out would be considered from information obtaining from experts, as the criterion for improving and revising the curriculum.

Phase 3: the implementing of the curriculum

When tentative curriculum was evaluated, revised, and corrected, it would be implemented with target group or samples. The research design was the Experimental Design as one-group pretest-posttest design (Mertler and Charles, 2005: 320 -323). Besides, the statistic using for hypothesis testing, included the Wilcoxon matched–pairs signed–ranks test and t-test.

Step 1: the implementing of the training program

For implementing the program, the target group included 10 science teachers who were willing to participate in the training, and attended the training program for 4 days by using Knowledge and Competency Test in the objective of curriculum research; Knowledge and Competency Test (IOC of the test = 0.80–1.00, P =

0.31-0.75, r = 0.25-0.88, r_{tt} = 0.87), and the Teachers' Competency Evaluation Form in establishing the supplementary subject curriculum as 4 Level Rubric Score. The research design in the present step, the researchers selected the one group pre test, post-test design (O1 X O2). The Pretest and Posttest scores were compared. The findings from the Teachers' Competency Evaluation Form in establishing the supplementary subject curriculum were compared with criterion.

Phase 4: the Improvement and Revision of the Curriculum

The improvement and revision of curriculum was to use the information to improve the curriculum so that it would be more complete.

Data analysis

Basic statistic including the percentage, mean, and standard deviation of scores obtaining from the evaluation of science teachers' training in establishing the supplementary subject curriculum and science process skills were analyzed.

The differences between the pretest and posttest mean values of science process skills were found by using the Wilcoxon matched–pairs signed–ranks test and t-test (dependent samples).

RESULTS

The teachers' training program consisted of the following factors: the rationale and principle, objective, learning substance, training processes, training activities, training media, and measurement and evaluation. The propriety of the program was "High" level ($\overline{X}$ = 4.22, S.D.= 0.12). The tried out program for science teachers' training was classified into 3 issues. The findings of the curriculum in teachers were as follows:

1) The teachers obtained knowledge in establishing the supplementary subject curriculum, action lesson focusing on Science Process Skills. Their posttest scores were significantly higher than the pretest at .05 level as shown in Table 1.
2) The teachers were competent in establishing the supplementary subject curriculum; in overall, the mean value was = 3.72 or 93.04% passing the criterion 80%, as shown in Table 2.
3) The teachers were competent in providing the learning management based on supplementary subject curriculum; in overall, the mean value was = 36.08 or 90.20% passing the criterion 80%, as shown in Table 3.

The findings from curriculum usage by students were as follows:

1) The science process skill of students taught by supplementary subject curriculum in each school, the posttest scores were significantly higher than the pretest at .01 level, as shown in Table 4.

Table 1. The comparison of teachers' pretest and posttest scores in establishing the supplementary subject curriculum.

The order of participant teachers	Posttest score (**30**)	Pretest score (**30**)	Differences (**d**)	The order of differences	The order of mark +	-
1	28	25	3	3	3	
2	27	11	16	10	10	
3	26	18	8	8.5	8.5	
4	26	23	3	3	3	
5	27	19	8	8.5	8.5	
6	27	20	7	7	7	
7	26	21	5	6	6	
8	29	25	4	5	5	
9	26	24	2	1	1	
10	25	22	3	3	3	
The sum of order with the addition mark (T+)					55	
The sum of order with the subtraction mark (T-)					-	0
Z					-2.812	
P-Value					0.05	

Table 2. The mean, percentage, and standard deviation of teachers' competency scores in establishing the supplementary subject curriculum.

The order of participant teachers	The mean value of evaluation in teachers' competency; Unit 1-6 by 3 scholars.						Total (**24**)	$\overline{\overline{X}}$	Percentage
	1	2	3	4	5	6			
1	3.00	3.00	4.00	4.00	3.00	4.00	21.00	3.50	87.50
2	3.67	4.00	4.00	4.00	3.00	3.00	21.67	3.61	90.25
3	4.00	4.00	4.00	4.00	4.00	3.00	23.00	3.83	95.75
4	4.00	4.00	3.00	3.00	4.00	4.00	22.00	3.67	91.75
5	4.00	4.00	4.00	4.00	3.00	4.00	23.00	3.83	95.75
6	3.67	4.00	4.00	4.00	4.00	3.00	22.67	3.78	94.50
7	3.00	3.00	4.00	4.00	4.00	4.00	22.00	3.67	91.75
8	4.00	4.00	3.00	4.00	4.00	4.00	23.00	3.83	95.75
9	4.00	4.00	4.00	4.00	3.00	3.00	22.00	3.67	91.75
10	4.00	4.00	4.00	4.00	3.00	4.00	23.00	3.83	95.75
Total	37.34	38.00	38.00	39.00	35.00	36.00	223.34	37.22	930.50
Mean	3.73	3.80	3.80	3.90	3.50	3.60	22.33	3.72	93.04
Percentage	93.25	95.00	95.00	97.50	87.50	90.00	93.04	93.04	93.04
S.D.	0.40	0.42	0.42	0.31	0.52	0.51	1.83	-	-

2) The students' experimentation competency while they were practicing the action lesson focusing of Science Process Skills in each school, the mean value passed the criterion 80% at .01 level, as shown in Table 5.

The findings of the improvement in curriculum after the usage are as follows:

1) The major material and activity in training plans was improved to be more appropriate; for instance, Unit 1-6,

the major material should be specified correctly and thoroughly in every issue.
2) The duration of activity should be adjust appropriately, for example, the duration for writing the lesson plan, the design, and experiment lesson writing should be expanded.
3) The details should be added in worksheet as well as activity sheet, for instance, the design for action lesson in activity sheet had to include the complete action lesson.
4) The media and supplementary training document,

Table 3. The mean, percentage, and standard deviation of teachers' competency score in learning management.

The order of teachers	The score by the Evaluator's Score (40)						$\overline{X}$ Mean (40)	Percentage
	Session 1		Session 2		Session 3			
	Eva. 1	Eva. 2	Eva. 1	Eva. 2	Eva. 1	Eva. 2		
1	33	33	34	34	36	36	34.33	85.83
2	33	33	37	37	37	37	35.67	89.17
3	36	32	38	38	37	38	36.50	91.25
4	36	32	37	38	35	36	35.67	89.17
5	36	36	36	34	36	37	35.83	89.57
6	37	33	38	38	37	38	36.83	92.07
7	36	37	38	37	38	38	37.33	93.32
8	33	35	38	37	37	37	36.17	90.42
9	36	36	38	38	38	38	37.33	93.32
10	34	33	36	36	36	36	35.17	87.92
Total	350	340	370	367	367	371	360.83	902.04
Mean	35.00	34.00	37.00	36.70	36.70	37.10	36.08	90.20
Percentage	87.50	85.00	92.50	91.75	91.75	92.75	90.20	90.20
S.D.	1.56	1.82	1.33	1.56	0.94	0.87	0.94	-

Table 4. The mean, percentage, and standard deviation of score in science process skill of students from all of 10 schools.

The order of school	Number of students (N)	Mean ($\overline{X}$)		Percentage		S.D.		t
		Pretest (30)	Posttest (30)	Pretest	Posttest	Pretest	Posttest	
1	26	8.62	20.80	28.70	69.33	2.82	3.12	15.24**
2	20	9.60	19.95	32.00	66.50	2.83	1.63	18.22**
3	21	14,57	22.71	48.57	75.70	4.59	2.91	9.72**
4	20	15.60	23.55	52.00	78.50	5.50	2.45	8.81**
5	27	13.44	18.66	44.80	62.22	4.76	1.79	7.98**
6	30	13.10	18.30	43.66	61.00	2.95	1.78	13.31**
7	26	13.53	20.34	45.10	67.80	4.31	2.65	10.08**
8	22	11.04	18.45	36.80	61.51	2.96	2.15	15.37**
9	24	13.79	21.54	45.96	71.80	3.45	2.28	14.84**
10	20	11.40	22.85	38.00	76.16	2.30	2.79	15.82**

** Statistically significant at .01 level.

should be added more, for example, the core curriculum of the Basic Education 2008, the indicator documents and science learning substance, textbook of substance and its characteristic to complete and sufficient with number of the participant teachers.

When the improvement and revision of curriculum was implemented based on the above details, the researchers establishing the complete curriculum could be able to use the science teacher training in establishing the supplementary subject of action lesson focusing on the science process skills further.

Table 1 shows that the participant teachers obtained their knowledge and comprehension in establishing the supplementary subject curriculum. Their posttest scores were significantly higher than the pretest scores at .05 level.

Table 2 shows that the participant teachers were competent in establishing the supplementary subject curriculum, in overall, the mean value was = 3.72 or 93.04% passed the specified criterion 80%.

Table 3 shows that the participant teachers were competent in learning management based on supplementary subject curriculum, in overall, the mean value = 36.08 or 90.20% passing the specified criterion 80%.

According to supervision, following up, and evaluation

Table 5. The mean, percentage, and standard deviation of scores in experimentation competency of students from all of 10 schools.

The order of school	The number of students (N)	Students' competency in experimentation (52 points)			
		Mean ($\overline{X}$)	Percentage	S.D.	t
1	26	44.95	86.45	15.79	11.30**
2	20	46.98	90.35	10.77	13.75**
3	21	47.18	94.74	9.54	15.77**
4	20	45.53	87.56	9.09	16.98**
5	27	43.81	84.25	2.82	67.01**
6	30	47.34	91.06	4.21	41.87**
7	26	48.24	92.76	4.11	37.81**
8	22	48.36	93.00	1.68	85.51**
9	24	43.32	83.30	7.86	22.78**
10	20	48.10	92.50	13.81	10.35**

** Statistical significance at .01 level.

of learning management, the teachers prepared teaching very well by using the questions to stimulate the students to develop their thinking skill, learning interest, cooperative learning, and good interaction between teachers and students. As a result, the learning was meaningful and achieved the specified goal.

Table 4 shows that the students taught by the supplementary subject curriculum of action lesson focusing on Science Process Skills in each school, the Posttest mean value of Science Process Skills was significantly higher than the Pretest at .01 level.

Table 5 shows that the students taught by the supplementary subject curriculum in each school, obtained their mean value of students' experimentation competency passing the criterion at .01 significant level. According to the supervision, following up, and evaluation in learning management, the students were more enthusiastic and interested in learning, cheerful with learning by practicing, collaborative in learning from experimental activities, effective learning, and skillful in Science Process Skills.

DISCUSSIONS AND CONCLUSION

The training program consisted of the following factors: rationale and principles, objectives, learning substances, training processes and training activities, training media, and measurement and evaluation. The propriety was in "High" level; the mean value was = 4.22. It might be because the developed program or curriculum, was studied the basic information. The problem situation in Science Learning Management was surveyed. Consequently, it was program development which could serve the teachers' need truly. Furthermore, the Focus Group Discussion by the 7 experts with experience in teacher

training, provided guidelines for training as well as establishing the supplementary document for training. It could be concluded that the systematic development of Science teacher training program, consisted of 4 steps of implementation process including: the study of basic information, curriculum development, curriculum trying out, curriculum improvement and revision. As a result, the propriety of program or curriculum, in overall, was in "High" level. It was congruent with Taba's (1962: 422–425) suggestion in the approach of curriculum development by the following steps : the analysis of problem situation and need, determination of curriculum objective, selection of content material, collection of content material, selection of learning experience, learning experience management, and evaluation.

The findings of teachers' knowledge show that the participant teachers obtained knowledge in establishing the supplementary subject curriculum. Their posttest scores were significantly higher than the pretest at .05 level. It might be due to the training could cause one's learning by participating in activities from the supplementary training documents. Consequently, the teachers gained knowledge in theory and approach for establishing the science curriculum and instructional management. Moreover, the training process could help the teachers to be aware of significance in Science Process Skills. Then, they studied according to the activities, practice, collaborative thinking and doing, experience, critiquing, and performance presentation. They learned and shared with each other. As a result, the participant teachers obtained better knowledge and comprehension in establishing the supplementary subject curriculum of action lesson focusing on Science Process Skill. It was supported by theory of Glatthorn and Fox (1996) who stated the importance of adults' training and learning in 4 major parts: 1) the desired experience management, 2)

the learning climate, 3) the learning focus, and 4) the teaching method and media. So, the teacher should more persistence in the training. They also were reinforced, encouraged, and rewarded in training by the scholars. Consequently, the teachers obtained better knowledge and comprehension in the training contents.

The findings of teachers' competency in establishing the supplementary subject curriculum, found that the participant teachers were competent in establishing the supplementary subject curriculum, in overall, the mean value was = 3.72 or 93.04% passing the specified criterion 80%. It might be because the teacher training program was evaluated by experts as well as improved and revised by the researcher. As a result, the participant teachers obtained better knowledge and comprehension in the factor of supplementary subject curriculum. In addition, the training classified the participants into appropriate working groups, and provided the scholars to advise and share with them. Consequently, the teachers were able to establish the curriculum successfully. It was congruent with approach of Furjanic and Trotman (2000) who proposed their rationale of evaluating the characteristic being occurred from the training as follows: 1) the participants' characteristics were to evaluate the changes in knowledge, the changes of skills, the changes of attitude, and the changes of work practice behavior, 2) the performance of work unit or organization were to evaluate the training outcome in real practice before starting the training program, during the implementation of training program, the end of training program, and after the training program for a period of time. According to the above theoretical approaches, they were administered as the guidelines for teacher evaluation systematically and continuously. As a result, the propriety of the curriculum or program evaluated by the experts and improved by the researchers, was improved. Consequently, the participant teachers gained more knowledge and comprehension in the factor of the supplementary subject curriculum. They were able to establish the supplementary subject curriculum. Moreover, there were the appropriate assigned groups for working under the suggestions of advice. Therefore, the teachers could establish the curriculum successfully.

The findings of teachers' competency in establishing the supplementary subject curriculum show that the participant teachers were competent in the learning management; in overall, the mean value was = 36.08 or 90.20% passing the criterion 80%. It might be due to the teachers' former experience as well as new knowledge obtaining from the training program regarding to the learning management systematically, the supervision, the following up, the evaluation, the continuous learning management by the scholars, the support and advice by the supervisors as mentors. So, the teachers were confident and had direction in learning management clearer. They were skillful in teaching and able to apply

different teaching techniques by sharing and learning among participants for their own instruction. Moreover, the supervisors cooperated with the school administrators in providing support, facilitation, and advice the teachers in some issues of instructional management process by 3 sessions of the supervision continuously. The teachers had opportunity in sharing and learning with the administrators and supervisors. As a result, they could have self-development and be ready for the next supervision. Consequently, the learning management was gradually improved. It was supported by research findings of Punprasert (2008: 135) in "A Development of Training Curriculum for Science Teachers in the Design of Laboratory Experiment Incorporating Local Wisdom", with 13 teachers of the samples. It was found that the participant teachers were competent in learning management and performance presentation for 81.60% which was higher than the specified criterion 75%.

The findings of students' Science Process Skills show that the students taught by the supplementary subject curriculum in each school, obtained the posttest mean value from the Science Process Skill Test, was significantly higher than the pretest at .01 level. It might be because the action lesson was emphasized on students' Science Process Skills. The students participated in activities they could have real practice, group working, meaningful learning, apply in their daily life. So, they were able to learn better. They obtained knowledge, comprehension, and Science Process Skills. Consequently, they had higher learning achievement. Furthermore, the action lesson was focused on Science Process Skills which could lead the students to have better analytical thinking process skill as well as competency in concluding the body of knowledge. It was congruent with research findings of Jansawang (2005: 59-72) in "The Development of a School-Based Elective Science Curriculum with an Inclusion of Local Wisdom for the Lower Secondary", development of the supplementary subject curriculum titled chemical substance in daily life by using the learning management of inquiry learning cycle as one course one cycle, by using local wisdom to increase science knowledge in the cleaning substance, food additives and food preservation, natural dyestuffs, natural substance in eliminating the insect and plant enemy, and herb for treating the disease. The learning management was tried out with 68 Grade 8 students. The students' posttest scores were significantly higher than the pretest.

The findings of students' competency in experimentation show that the students taught by the supplementary subject curriculum in each school, had their mean score of competency in experimentation passing the criterion 80% significantly at .01 level. It might be due to the students had practiced the experimentation activity continuously. In addition, the teachers assigned the students to participate in group working. So, the students

obtained both of skill and competency in experimentation more. They collaborated in thinking, doing, and sharing. They changed their role and duty in group work until they could experiment quickly as well as conclude the body of knowledge by themselves. As a result, they improved their Science Process Skills. Besides, the teachers advised their students while they were participating in activities. In addition, the students also were given the good advice from the supervisors. So, they were able to conduct the experiment very well. It was congruent with research findings of Chan (2004: 11) in "The Assessment of Laboratory Performance Skill in Grade 9 Science via Individuals and Pairs", The comparison of the effect of students' science experiment of the world titled chemical substance from the wind and the rain by the knowledge inquiry process, with 466 Grade 9 students from 5 schools in the West of New York, the Unites State of America. The students were assigned into 2 groups. 150 students from the first group conduct individual experiment. Another group of 296 students conducted the experiment in pair. Then, they were evaluated the action skill, working plan, data collection, competency in presenting the experiment findings by graph and logic from the instruments as evaluative criterion. The findings of the 2 groups were compared; it was found that there were significantly differences. Furthermore, it was found that the students' overall action skill increased as well. It should be noted that one limitation of the study was the use of a quasi-experimental design, although this can be overcome in future studies by randomly selecting the participants of the groups.

Conflict of Interests

The authors have not declared any conflicts of interest.

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Appendix

Learning Substance, Learning Performance, Action Lesson, and Product

The teacher development for enhancing the efficiency in learning management is based on work units as original affiliation in supervision, following up, and evaluation systematically and continuously in order to be the mentor for stimulating, monitoring, caring, following up, supporting, and inspiring the teachers in learning management by focusing on the students' real life, learning condition, and perception. The students had freedom to develop based on human beings' potentiality in mental, physical, intellectual, emotional, and social aspects. The students participated in learning activity, learning how to learn, learning by practicing, lifelong learning, and learning persons. They could learn meaningfully and be able to apply their knowledge in daily life as shown in Table 6.

Table 6. Learning substance, learning performance, action lesson, and product

Learning substance	Learning performance	Action lesson	Product
Cleaning agents	1. Experimenting and explaining how to produce the cleaning agents.	1. How to produce herb dishwashing liquid. 2. How to produce liquid hand soap.	
Substance Purification and Extraction.	2. Experimenting, Checking, and Explaining the substance purification and extraction.	3. How to extract the coloring matter in food from some kinds of plants. 4. How to extract the Phyllanthus acidus or otathete goose-berry to investigate formalin in food.	

Table 6. Contd.

Learning substance	Learning performance	Action lesson	Product
Substance and Food Preservation	3. Experimenting and Explaining the substance use in daily life for food preservation.	5. How to make herb salted egg. 6. How to make salted vegetable. 7. How to make shredded and salted beef.	
	4. Experimenting, Explaining, Being Aware, Valuing, Decision Making in using the substance in daily life by Science Mind, Ethics, Morality, and Desirable Characteristics.	8. How to make bio fertilizer or effective microorganisms. 9. How to make ginger tea. 10. How to produce the Dried Teak Leaf for eliminating the termites.	

Table 6 shows the experiment Lesson 1-10 that the students had meaningful learning. The above experimental activities were applied by the students in their daily life, for instance, the herb dish washing liquid, hand washing soap, herb salted egg, Pea Jelly, Panden Jelly, Pickled Vegetable, shredded and salted beef, Bio Fertilizer, ginger tea, and Dried Teak Leaf for Termiticide. The students could do it as sideline for increasing their income as well as their family.

Full Length Research Paper

The proposed model of writing with accompaniment of music education for students and its prospect in application

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The aim of this research is to prepare undergraduate music education students for a course model to write songs accompanied with one voice and show the functionality of its application. A first was lesson given to selected working groups and were asked to write children's songs accompanied. It was accompanied by the model described in writing during the course of twelve weeks, and tests have been made on the issues at the end of each lesson learned. School songs for the first course in the final draft version of the training course were given again to the students and were asked to write with them. There was a significant difference between the scores of the last lesson with students based on the results of the study.

Key words: Accompaniment, piano education, music education, proposed model.

INTRODUCTION

Music is a subject with very evocative words and various ideas in one's mind. The simplest definition is it is a sound that is pleasant to the ear; it is transmitted via emotions. When music is mentioned, the first thing that comes to mind is the artistic dimension of music. That is the art of music.

In art education, training is kept at the forefront of creativity; divergent thinking is developed by each student's personal development and trends in parallel to one of the most reliable media with an attempt to redirect (Buyurgan and Buyurgan, 2012:3).

The purpose of art education primary and secondary education is to develop children's thoughts and feelings for a healthier future. In art education, children with strong art direction are guided in terms of professional skills and creativity. Art education is one of the most important branches of music education.

Music education is musical behavior of individuals gained through their lives, or musical behavior of individuals is the process of changing the purpose of their lives" (Uçan, 1996: 170). Music education prepares the artistic sense of an individual. The objective of this training is to enable student to use voice, develop their hearing and sense of power, rhythm, language development, team work and sense of self-confidence to raise a healthy society. Music education in instrument training graduates who have a very important function of artists and music teacher has a big contribution to the

future professional life of the candidate.

According to Ozen (1996: 20), in instrument training, students establish a genuine connection to the music, the increasingly turn to professional and amateur music and music it should be seen as a way to pursue a career. According to this definition take care of the instrument training should be provided to students, no matter what level of education. Together with students to establish a link between music and their musical education, music and more will turn to love. If you start the level at which students begin, it will rise gradually and will be able to make career in musical education. Piano training represents one of the lower branches of musical education. Piano teaching is complemented by its practical and theoretical aspects. To reach the current level of teaching and learning in the course of practice and theoretical field at the same time, support must be shown each way (Kahramansoy, 2006:13).

Piano training, there are necessarily caused by the administration of the above-mentioned institutions. These reasons include: (Kutluk, 1996; cited Yücetoker, 2009):

1- A person playing the piano polyphony grip, sight reading, musical hearing, harmony, musical forms such as the direction of the information found in the very important area of development opportunity.
2 – Piano solo instrument, as well as being a self-contained, to be accompanied by an accompanying instrument used to make the human voice or another instrument to increase the educational importance of music education.

Music education students are included in seven periods studied piano lessons. This course is technical and musical skills need to win in. They are also playing skills with these individuals to be trained in this course in the future has become a music teacher. When the course of the play, however, accompanied by a music teacher curriculum it seems to be only a period. Right hand played monophonic songs of the aim of the course is seen as a period of teaching experience of playing with, marches and folk songs adding the polyphonic playing with his left hand to gain skills. The expected behavior of students in this course;

Learn various musical sentence patterns.
Make harmonic gradation of a school song.
Examine forms of music for a school song.
To learn the usage of Harmonic walk.
Learn to play school song with both hands in unity.
Each voice is the voice of the master degree range.

This behavior can teach students in accordance with the practices associated with playing chords. However, any accompanying discussed can improve their writing skills.

The accompanied composition of the main melody or tone to support the parties or to deliver her to the forefront and is defined as the party or parties intended to help him winning content and depth (Bilgin, 1998). The importance of intonation school students while performing the next song and the accompanying terms of this definition is able to give great sound. Despite the importance of the school told the accompaniment of the song, the number of accompanied in school music repertoire of songs written school is very small. This course is available as a music teacher and curriculum writing accompanied him. Therefore, student's harmony, form data, to take the course next to the see the accompanying write solfeggio and piano lessons there are thought to be of great importance.

Aim

The aim of this research is to prepare students for a summer course model for them to accompany their singing with one voice and show that model school students on the functionality of the application. There is also a music education curriculum as a result of the improved model in the light of the department to emphasize the necessity to take part in the course.

METHOD

Data collection

Data of the study were developed by Yücetoker; the "performance evaluation form" was collected. The study group and writing skills associated with the pre-draft model studies were evaluated and scored 5 with grading. Later draft model work with writing skills and also evaluated at the end points are given the same grading system. These scores were measured and compared. Rate degrees are as follows: 1 point: 0-20 / 2 point 21 – 40 / 4 point 41 – 60 / 4 point 61 – 80 / 5 point 81 – 100

Population and sampling

Nigde University Department of Music Education students were selected as the study group. 17 girls and 13 boys consist of the selected students. Also, all the students in the study group, piano, harmony form information and lessons have a homogenous distribution at the same time.

Research design

The draft model was developed by the authors as experts in the field and 5 were evaluated as separate issues for each week's lesson. The issues are as follows:

1. Students do grading on a school song and the author on the degree of chord.
2. Students, accompanied by the singing of school graduations, measure the thinkers and writers of note.
3. Students were accompanied by piano melody written and the

Table 1. The analysis of t test pre – post tests for students with basic skills for writing.

Criteria	X	S	Sd	t	p
Rating	4,26	0,47			
Left hand figures	4,12	0,71			
Right-hand melody	4,38	0,51	70,236	4,340	.001
Playing	4,22	0,74			

Table 2. The analysis of t test pre – post tests for students with two hand writing skills.

Criteria	X	S	Sd	t	p
Writing with both hands	4,02	0,45			
Playing with both hands	3,78	0,72	68,052	3,411	.000

Table 3. The analysis of t test pre – post tests for students with advanced writing ability.

Criteria	X	S	Sd	t	p
Writing prelude	4,45	0,43	69,256	2,578	.002
Writing coda	4,32	0,51			

Table 4. The analysis of t test pre – post tests for students with editing ability.

Criteria	X	S	Sd	t	p
Writing all works	3,56	0,71	70,145	2,121	.000

school song.
4. The accompanying figure written for the left hand is given to students.
5. Students make harmonic analysis for the accompanying figure.
6. Students produce harmonic melodies based on the analysis made and composing songs sung accompanied with piano using two hands.
7. Right-school students writing the song melody and accompaniment and left separately requested.
8. Students make harmonic analysis of the tunes and the first author of an accompanying figure for the left hand.
9. Writting melody with left hand with prompt harmonic accompaniment.
10. Students sing accompanied by a friend, using two hands.
11. Students learn to write music and supplied input for measurement work.
12. Students learn to write a piece of code in four dimensions given.
13. Students wrote and produced the song with right and left hand accompaniment; composing music and code writers to produce entries.

Data analysis

Collected data were analyzed by using SPSS 18.0. The sub-

problems were shown separately via tables. The normality and variance homogenity of data from the questionnaires were tested in determination of statistical different t- test (P<0,05)

FINDINGS

In Table 1, students' harmonic scaling, writing figure for the left hand to the melody for the right hand, writing melody for the right hand to the figure for the left hand and writing melody and figure of two hand play at the same time is required. A significant difference between pre-test and post-test scores of students according to their scores was seen (p>0,001)

In Table 2, the right to a school song and the students were asked to write with left hand for the melody separately and are accompanied by their summers playing with soloist. A significant difference between pre-test and post-test scores of students according to their scores was seen (p>0,000).

In Table 3, two-hand accompaniment tunes from students to write a piece of music written within the guidelines were asked to login. Also within the same work rules have been told that four dimensions of writing code. A significant difference between pre-test and post-test scores of students according to their scores was seen (p>0,002).

In Table 4, a melody of students writing with the left and right, all the work which he wrote the music and co entry has been requested in writing behavior. A significant difference between pre-test and post-test scores of students according to their scores was seen (p>0,000)

DISCUSSION AND CONCLUSION

In this research program model attempts were made to arrive at certain basic conclusions. Students in music education studied piano, harmony, form and information, which are theoretical courses. Also playing lesson with a period is also seen as a compulsory subject in the curriculum. Accompaning a student's test results may seem enough to take this course the students seem to be accompanied by the development of writing skills. 30 students before the experiment to determine the child works chord, chords, and writing figures seem determined to leave as well as the harmonic mean of these figures. However, wanting to write melodies creativity, music and code entry level is significantly lower in writing disciplines. But the end of the experiment the students to produce appropriate melody chords, writing code and entrance music, which is quite successful in right and left separately to produce melodic and harmonic figures have been determined to hand. This is seen as core courses that students' harmony and according to the

results reveal the results influence the behavior is not to write with. Therefore, the next course of writing accompanied with the music education program is considered to play the course should be as well.

Many scientific articles and theses are written as accompaniment playing and writing. Çevik (2011), faculty of education department of music education for students with their problems playing lesson, the strain causes and proposed solutions related to the subject. Music teacher candidates emphasized that there should be more of accompaniment book. In addition, the vast majority of school students in the same study said that they had difficulty with writing songs with piano accompaniment. Here also given a separate writing classes piano accompaniment can be understood and it is important that students need to acquire these skills. Demirtas (2015), in determining their attitudes toward students with lessons and playing, made a study designed to compare the academic performance and attitudes. This study compared the results between the attitudes and achievements of students which emerged as a significant difference. In the same study these courses take place in the form of recommendations to improve the effective achievement of the necessity of writing and accompanied by piano students to be more comprehensive. These recommendations are said to reveal the necessity of writing course accompaniment. Küçük (2014) with music playing in his work with the teachers' hours playing with them it is less and stated that they feel inadequate in this regard. The same study also revealed that accompanied the play with a proportional writing course. Yurga and Kaya (2009) argued that lessons should be accompanied by the development of knowledge and skills about the function of harmony and form. Accompanied course is a set of theoretical course. It must therefore be aimed at developing the piano skills alongside the theoretical courses with a student's playing or writing skills.

Conflict of Interests

The authors have not declared any conflicts of interest.

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Full Length Research Paper

The validity and reliability study of the sports facility utilization scale of university students: The case of Karabük University

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This study aims to develop a valid and reliable measurement instrument with the intent of determining the interest levels of university students towards utilizing sports facilities. In the context, target population of the study consists of the Karabük University while its sampling consists of 700 (290 females and 410 males) students who study in different departments. During the preparation of the scale, phases of determining scale items, preparing test scale, implementing the scale, determining reliability and validity were applied respectively. Firstly, the scale was created from the items selected from the item pool for the test application and exploratory factor analysis was conducted to the data collected from this draft. As a result of the exploratory factor analysis which was conducted for construct validity, it was concluded that the scale was of a single factoral construct and explained 40.39% of the total variance. The factor load values of the 13 items which constitute the single factor vary between .35 and .80. The fit of the factor and the items constituting this factor was examined through confirmatory factor analysis (CFA). When the fit index values obtained as a result of CFA and error values were evaluated, it was concluded that the 13 items exhibited perfect with the single factoral construct. When the Cronbach Alpha reliability coefficient was evaluated to calculate the internal consistency coefficient of the scale, it was concluded that it had a high level of reliability with .87.

Key words: University youths, sports facilities, sports areas, service, scale.

INTRODUCTION

University education undoubtedly constitutes one of the most important processes in education. University is education unit where not only scientific but also occupational theory and implementation are taught and which prepares one for life socio-culturally as well. Students have educational (academic), social, cultural, sportive expectations from university at different levels (Şahin et al., 2011: 433). These expectations emerge as a distinguishing factor for universities with higher quality. It is believed that right, productive and student-utilizable sportive investments which have been made with the increasing number of universities in our country will affect

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the university preferences of students in the medium and long term.

Students both see the concept of sports as a social need and need sport to get away from the intensity and stress of daily life. Sport has been observed to be an effective factor especially in the socialization process of the youth (Büküşoğlu and Bayturan, 2005: 174). On the other hand, immobility and obesity which are among the biggest problems of our age pose serious threats to the health of the youth with an increasing trend; and individuals who did not gain the habit of exercising in their adolescence and adulthood period can be deprived of the positive effects sports would bring to their lives. Therefore, it is necessary to create areas which provide the habit of doing exercise to university students (Güleç et al., 2008: 108).

It has been discovered that the habit of exercising rises with the higher education process and that in the next generation, parents make their own children exercise and advise them on making use of their spare times with sports (Can, 2010: 868). In other words, the habit of exercising rises in families in direct proportion to level of education.

On the other hand, the studies conducted in our country have found that the participation and interest level of the university youth to sports is still below the required and desired levels (Yıldırım et al., 2006: 52). Among the reasons behind these low sports participation levels is also the fact that the university youth do not utilize the facilities sufficiently (Gizir, 2005: 206). In our world where the importance of sport is ever-increasing, all these data demonstrate that the university youth require competent, well-operable sports facilities with quality.

University years are a suitable period in which gaining sport habits has been a bit delayed but this last chance can still be made use of (Bayrak et al., 2010: 103). When sports facilities render accurate and effective services, both universities and students will find the chance of utilizing the emerging positive effects mutually.

Research significance

In this study, factors such as the university students' awareness status of the existing sports facilities, their level of ability in using these facilities, the service-rendering level of the facilities were investigated and the subject of "sports facilities in universities", which is one of the importance factors in the playing and prevalence of sports were questioned through various factors. The answer to the question of "Are the sports services, which must be rendered to the youth in the same process as the university education in terms of being adopted as a lifestyle especially in the preparation to life and post-adolescence period, symbolic and non-functional service units in universities or are they functional and productive service areas?" was sought.

METHOD

Research design

The study aims to develop a valid and reliable measurement instrument with the intent of determining the interest levels of university students towards utilizing sports facilities. From this perspective, the study is of a screening model. According to Karasar (2007), screening model is a research approach which aims to describe a past or still-existing situation as it is.

Participants

The target population of the study consists of the 40176 (15094 females and 25082 males) students who were receiving education in the Karabük University in the 2014 – 2015 Academic Year. 1000 (368 females and 632 males) undergraduate students who continued their education at different Faculties and Colleges of the Karabük University were included in the research sample. In the implementation phase of the scale survey, 87 students stated that they did not wish to participate in the study. As a result of the conducted pre-assessment, it was detected that draft surveys of 213 scales were deficient or insufficient and the draft surveys of the scale which was filled by 700 (290 females and 410 males) students were taken into consideration. 70% of the sample included within the research scope was accessed to. As this was a scale development study, generalization from the sample to the target population was not carried out. According to 0.04 error amount in the 96% reliability interval, the sampling number which can represent the universe composed of 40176 students is 649 and, hence, 700 samples which were determined for validity and reliability are at a number which can represent the universe. Access date: 02.10.2015 http://www.raosoft.com/samplesize.html

Operation

In this study, the data collection tool was implemented to the students of the Karabük University by the researcher. Before collecting the data of the research, meetings were held with the Presidency of the Karabük University and official permits which were required in the scale implementation phase of the study were obtained. Firstly, students were informed about the aim of the study and how the scale would be filled and then those who agreed to participate in the study were included in the research after answering their questions. The data collection tool was handed out to the participants with the instruction page on top and the information form right under it. It was especially underlined in the instruction page that the research was being conducted with academic purposes and did not aim to collect information about the participants on an individual basis and, hence, there was no need to write names or any information which would reveal identity.

Data collection tools

A measurement tool consisting of two parts was utilized in the data collection phase. The first part of the measurement tool is the demographic information form and the second part is the *sports facility utilization scale* which has been prepared to determine the interest levels of university students towards utilizing sports facilities.
Demographic Information Form: In the demographic information form, demographic questions (age, gender, registered faculty or college, height, weight, etc.) were included to obtain information of the students participating in the research. As well as the demographic questions, students were asked about their alcohol

and cigarette use status, the sport branch they were interested in, the football team they sport and their active exercising status.

Sports Facility Utilization Scale: This scale was developed to determine the interest levels of undergraduate students receiving education in the University towards utilizing sports facilities. The scale development effort was executed in four phases. These were named as the determining scale items, preparing test scale, implementing the scale, determining reliability and validity phase.

a. Determining Scale Items Phase: In this phase, the related literature and studies on the subject of determining the interest levels of individuals towards utilizing sports facilities were examined. During the creation of the scale, studies conducted by Arthur (2004), Ceyhun (2006), Daly (2000), Ekenci (1998), Theodorakis (2001), Flannery (1999), Gustafsson and Johnson (2003) were utilized.

b. Preparing Test Scale: In this phase, 20 efficacious element statements such as "Sports facilities are primarily used for competitions and performances in our university", "I can use the sports hall regularly in our university", "I feel strong after exercising" which determine the approach of university students towards sports facilities and sports were compiled one under the other. 24 of these statements are related to sports facilities while 20 of them are about sport interest levels. A scale in the 5 Point Likert format which expresses an opinion as "5- Agree completely", "4- Agree", "3- Partially Agree", "2- Indecisive", "1- Disagree" was placed across these statements. The data was processed by inversely coding the items included in the scale which are negative in terms of meaning. Moreover, instructions which inform about the aim of the scale and answering style were written at the beginning of the scale. The 20 items which were prepared were checked by both an expert in this field and 2 experts on Turkish Grammar with the aim of determining whether there was a confusion in the wording which could cause deficiency or misunderstanding.

c. Implementing the Pretesting Phase: The pretesting of the sports facility utilization scale of individuals which was prepared as a draft and consisted of 20 items in total was implemented on 400 university students.

d. Determining Reliability and Validity Phase: In this phase, *exploratory factor analysis* was conducted in the first phase to determine the construct validity while implementing the factor analysis and the dimensions of the scale were identified. *Confirmatory factor analysis* was conducted to confirm these identified constructs (Tabachnick and Fidell, 2007).

Data analysis

The information obtained with the scale survey was analyzed via the "SPSS for Windows 15.0" and "Lisrel 8.8" statistical package programs. Frequency distributions were found for all questions. Firstly, extreme value analysis and lost data analyses were conducted on the data to be used in the study and means and standard deviations were calculated for the items.

Exploratory factor analysis was conducted first in the scope of validity and reliability analyses of the scale. After the exploratory factor analysis the confirmation of the determined factors, in other words confirmatory factor analysis with the purpose of determining whether the determined factors and the attitude statements within each factor were really associated with that dimension for the sports facility utilization scale, was conducted via the LISREL 8.8 package program.

FINDINGS

The validity of the sports facility utilization scale's Turkish form was discussed in terms of language and scope validity and constructs validity.

Construct validity: Exploratory factor analysis (EFA) validity study of the sports facility utilization scale

The construct validity of the scale was tested via factor analysis. For that purpose, whether the data obtained from the test implementation was appropriate to factor analysis was examined. The results of the Kaiser-Meyer-Olkin (KMO) and Bartlett tests, which show the appropriateness of data to factor analysis, have been presented in Table 1.

As can be seen in Table 1, the calculated KMO adequacy measure value is 0,90. Leech et al. (2005); Şencan (2005); Tavşancıl (2005) have stated that factor analysis cannot be conducted under the value of 0,50 which is accepted as the critical value (Büyüköztürk et al., 2010, p: 207; Tavşancıl, 2010). When the Kaiser-Meyer-Olkin value of the scale is compared with the critical values, it was concluded that "0.90-1.00" was at a very high level (Büyüköztürk et al., 2010, p: 207). The Bartlett Test of Sphericity which was calculated for the same data is 2357.11 and is significant at the 0,01 level ($X^2_{78}=2357,11$). These values demonstrated that the data obtained from the test application can be subjected to factor analysis. It was concluded that the sampling number on which application was made is adequate for factor analysis.

The results of the factor analysis which was conducted by using the principal components analysis are in Table 2.

As can be seen in Table 2, there is 1 factor with a eigenvalue greater than 1.5. The variance which is explained by this one factor is the 40.39% of the total variance. Taking the initial eigenvalues into consideration, the eigenvalue of the first factor (5,25) is stated as 1 factor as it is greater than 1.5.

The factor load the items included in the test survey possessed is presented in Table 3.

In Table 3, the 1st, 2nd, 6th, 7th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 17th and 20th items have the highest load value in the first factor. The factor loads of items in the first factor vary between .35 and .80. According to these load values, the scale is single factoral and all items have a load value which can be included in the scale. As the 3rd, 4th, 5th, 8th, 16th, 18th and 19th items which went through factor analysis are below the .30 factor load, which is considered as the threshold value, they were excluded from the study. According to Tabachnick and Fidell (2001), if the load value of each item is below the 0.30 critical value, it is determined "mediocre" (quoted in Büyüköztürk et al., 2010). The threshold value was identified as ,30 to increase the explanation variance of the determined factor.

The results of the item analysis which was conducted based on the item total correlation have been presented

Table 1. Results of KMO and Bartlett Tests.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.90
	X^2	2357,11
Bartlett Test of Sphericity	Sd	78
	P	,000

Table 2. Factor eigenvalues and explanation variances.

Factor	Initial Eigenvalue		
	Total	Variance %	Cum %
1	5,25	40,39	40,39

Table 3. Factor load of items and item total correlation results.

	1	r
b10	0,80	0,74
b7	0,72	0,66
b12	0,68	0,63
b14	0,66	0,60
b9	0,65	0,59
b15	0,64	0,58
b11	0,64	0,60
b6	0,59	0,53
b17	0,54	0,50
b20	0,50	0,46
b13	0,46	0,43
b2	0,37	0,39
b1	0,35	0,36

*p<,05

in Table 3. According to these results, correlation values vary between r=.36 (b1) and r=.74 (b10) and are significant at the 0,05 level. The total correlations of the 13 items which remained on the final scale survey are of an acceptable quality; in other words, as the characteristic which can be measured with all of the scale is the same with the characteristic which is tried to be measured with each item, it can be stated that these 13 items have the quality to be included in the scale.

Confirmatory Factor Analysis (CFA)

Whether the construct of 1 factor and 13 items related to the sports facility utilization scale was confirmed was examined through confirmatory factor analysis (CFA). Confirmatory factor analysis (CFA) aims to evaluate to

what extent a factorial model which consists of factors formed by many observable variables (latent (implicit) variables) fits with real values. The model to be examined can define a construct which was determined by using the data of an empirical study or was built based on a certain theory (Sümer, 2000). Various fit indices are used to evaluate the validity of the model in CFA. The most frequently used among these are (Cole, 1987; Sümer, 2000) Chi-Square Goodness of Fit Test (χ^2), Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Non-Normed Fit Index (NNFI), Normed Fit Index (NFI), Goodness of Fit Index (GFI). The fact that values observed in the scale model are in X2/d<3; 0<RMSEA<0.05; 0.97≤NNFI≤1; 0.97≤CFI≤1; 0.95≤GFI≤1 ve 0.95≤NFI≤1 intervals demonstrate perfect fit whereas 4<X2/d<5; 0,05<RMSEA≤0.08; SRMR≤0,08; 0.95≤NNFI≤0.97; 0.95≤CFI≤0.97; 0.90≤GFI≤0.95 and 0.90≤NFI≤0.95 demonstrate acceptable fit (Kline, 2005; Sümer, 2000).

Confirmatory Factor Analysis (CFA) validity study of the sports facility utilization scale

Confirmatory factor analysis (CFA) was used in the confirmation of the single factoral construct which was obtained as a result of the exploratory factory analysis used in the research. In the values included below, the analysis results on whether the scale provided multivariate normality assumption have been stated. According to these values:

Relative Multivariate Kurtosis = 1.195, as this value is greater than the value of 1.00, the multivariate normality assumption found to not have been provided. In addition, considering the Skewness and Kurtosis values, these are observed to have not provided the multivariate normality assumption as they are significant according to p<,05.

Test of Multivariate Normality for Continuous Variables

Skewness			Kurtosis			Skewness and Kurtosis	
Value	Z-Score	P-Value	Value	Z-Score	P-Value	Chi-Square	P-Value
------	------	-------	------	------	-------	---------	-------
17.389	21.347	0.000	233.034	13.447	0.000	636.507	0.000

If the multivariate normality assumption had been provided according to these results, we would have used the Maximum Likelihood (ML) parameter estimation
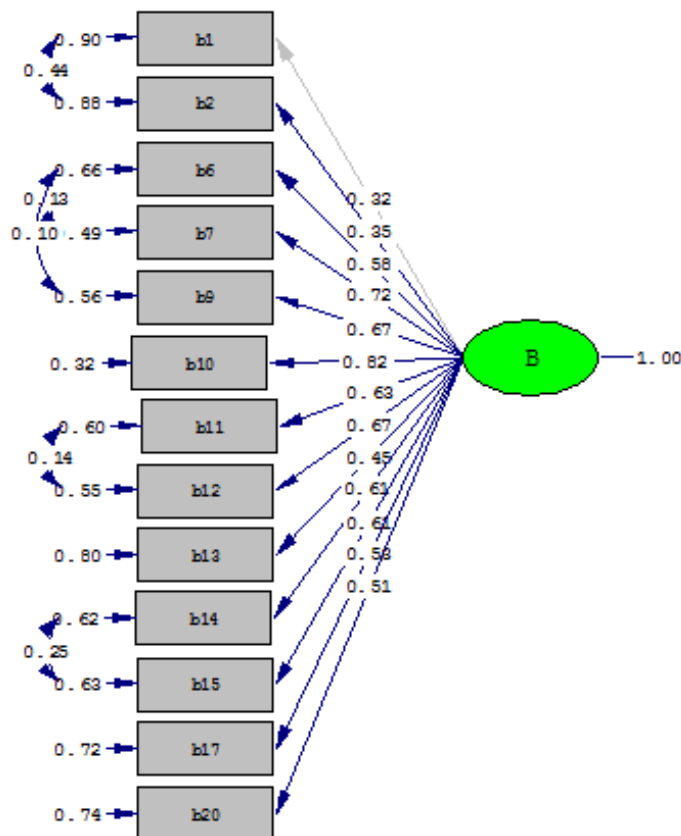
Figure 1. Path diagram of the scale based on the 1st Level 1 Factoral Robust ML Method.

method; however, as it did not provide it and our sample was small, we directly used the Robust Maximum Likelihood (Robust ML) parameter estimation method as it does not depend on sampling. Our model is the 1st Level 1 Factoral Robust ML method.

CFA was implemented to evaluate whether the 1 factor and 13 item construct of the scale was confirmed. In the first applied CFA, items which have the statistically non-significant t value were examined. According to this examination, no item which had the non-significant t value was found. The resulting path diagram is presented in Figure 1.

Fit indices were found as χ^2=125,24, sd=60, χ^2/sd= 2,09, CFI=0.99, NNFI=0.98 ve NFI=0.98, GFI=0,95 RMSEA=0.047, SRMR=0,040. When the coefficients which show the relationship between the observed variables and factors of the model which shows the factorial construct of the scale were examined, it was concluded that the fit indices were at an adequate level. When the fit indices values and RMSEA and SRMR values which indicate error values were examined, it was concluded that there was a perfect fit. Considering the fit statistics calculated with CFA, it was decided that the

single factoral construct of the scale which was determined via EFA generally fit with the collected data.

When Figure 1 is examined, it is observed that the scale whose final form has been presented consists of 13 items and 1 factor.

The regression values and t values of the items are included in Table 4.

When Table 4 is examined, it was determined that the obtained regression coefficients and t values were significant and the model was confirmed. From a general perspective, it was concluded that with the value of R^2=0,68, b10 was the most important item of the scale whereas with the value of R^2=0,10, b1 was the least important item of the scale.

Reliability study of the sports facility utilization scale

The Cronbach Alpha internal consistency coefficients of the items which were determined for the one factor of the sports facility utilization scale for the reliability of the scale are presented in Table 5. As this coefficient is calculated by taking all questions into consideration, it is a

Table 4. Regression and T Values of the CFA.

Sports Facility Utilization Scale		
M	R^2	t
b1	0.10	Sabit
b2	0.12	7,03
b6	0.34	6.81
b7	0.51	6.71
b9	0.44	6.55
b10	0.68	7,14
b11	0.40	6,40
b12	0.45	6,65
b13	0.20	5,80
b14	0.38	6,62
b15	0.37	6.65
b17	0.28	6,54
b20	0,26	6,07

Table 5. Alpha reliability coefficients of the factors.

	Sports facility utilization scale
Number of Items	13
Cronbach α	,87

coefficient which reflects the general reliability construct of the measurement tool better than any other coefficient (Özdamar, 2004).

According to Table 5, the Cronbach alpha internal consistency coefficients are observed to have .87 reliability coeffcient in the sports facility utilization scale with 13 items. It was concluded that the reliability coefficient of this scale was highly reliable, which also demonstrates that the scale had an acceptable level of internal consistency. The fact that the items are highly-reliable within themselves is stated with the reliability coefficient mentioned above. Tezbaşaran (1997: 47) states that a reliability coefficient which can be considered adequate in a likert type scale must be as close to 1 as possible. According to these results, it is seen that the reliability of the whole scale which was used for the research is at a high level.

DISCUSSION AND CONCLUSION

A tool which can measure the sports facility utilization levels of university students in Turkey has been developed through this study. Although an original study was not encountered in the related literature review, it has been observed that similar studies have been implemented as surveys. In a study conducted by Hacıcaferoğlu et al. (2012: 65), it was determined that even the undergraduate students at the School of Physical Education and Sports cannot utilize sports facilities at a rate of 74.1%. This scale, which we believe can assist as a measurement tool on the subject of to what extent universities with ever-increasing budgets in recent years can fulfil the sportive needs of the youths, can be improved with various factors and innovations in the future. Therefore, this study is expected to contribute to the literature and studies to be carried out in the relevant field. Based on the findings, it can be observed that "Sports facility utilization scale of university students" is a valid and reliable tool which can be used in different disciplines.

Conflict of Interests

The author has not declared any conflicts of interest.

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Full Length Research Paper

Analyzing state and private school students' achievement goal orientation levels in terms of some variables

Ünal TÜRKÇAPAR

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The purpose of this study is to investigate the state and private school students' achievement goal orientation levels in terms of some variables. Quantitative survey method was used in this study. Study group in this research consists of 201 students who are studying at state and private school in Kahramanmaraş during the 2014-2015 academic year. The data were collected using "Personal Information Forms", developed by the researcher and the Inventory of Achievement Goal Orientation developed by Elliot and McGregor (2001) and adapted into Turkish by Akın. Research findings reveal that depending on the gender variable there is no significant differences between the students' achievement goal orientation scores; depending on the doing sports variable, in terms of sub dimensions of achievement goal orientation such as mastery approach there is a significant difference in favor of students who said yes; and for performance AVOIDANCE, there is a significant difference in favor of students who said no; depending on the types of the school variable there is a significant difference in favor of state school students; depending on class level variable there is a significant difference in favor of first graders, and depending on the socio economic level of families there is a significant difference in favor of students who have low socio economic level.

Key words: Achievement goal orientation, orientation, education.

INTRODUCTION

When analyzed, it can be seen that the concept of achievement goal orientation consists of success and orientation. For this reason, the concepts of success and orientation must be defined before achieving goal orientation. In Turkish Language Association (TDK) Methodology Glossary of Terms success is defined as "the positive product of people's talents and mental or operational activity, which depends on the growth", and in

Current Turkish Dictionary it is defined as 'to achieve job, obtain useful results from a job, successes' (TDK).

Goal orientation focused on what the students think about themselves, their duties and performances rather than classifying them with respect to their goals regarding achievements which was developed in the socio-scientific structure, and whether they possess the motivation that is necessary. The goals that the students set for themselves

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regarding academic success and their trials to achieve these goals are very important in the teaching and learning process (Akın, 2006a; Eryenen, 2008). Goal orientation with a general approach can be defined as the measures and standards consisting of the scientific, dynamic and perceptional behaviors that the students are using to measure their performances and the faith they have regarding successfully achieving their goals (Midgley et al., 1998; Midgley and Urdan, 2001; Anderman et al., 2003; Wilkins, 2004; Wolters, 2004; Svinicki, 2005; Rabideau, 2006; Özgüngör, 2006; Akın and Çetin, 2007).

Cüceloğlu (1994) describes it as 'reaching the standards of excellence, aiming to exceed these standards. In Turkish Language Association (TDK) Education Science Glossary of Terms orientation is defined as "in complicated and problematic situations, individuals' determining of their own direction and attitude and choosing the places and time in any relationship, to act consciously in terms of evaluating the conditions". In Current Turkish Dictionary, orientation is defined as determining individuals own statue or the status of the place where they are in, compared to other places and the individual's attitudes determined by complex and problematic situations (TDK).

Achievement goal orientation focusing on student achievement of the objectives and orientations improved in social-cognitive structures and instead of classifying the students according to their having motivation or lacking of motivation, it classifies the students focusing on what they think about their own tasks and performances. Academic achievement of students, the goals that they set for themselves and the attempts to fulfil this goal are crucial for teaching-learning process (Akın, 2006a; Eryenen, 2008). It is found that to let students gain the intended qualifications in the teaching-learning process, it is important to determine their achievement goal orientation and taking this into account while doing educational activities. Despite the achievement goal orientation literature which emphasizes the importance of achievement goal orientation in teaching-learning process, when the research done in this field is examined, it is found that works addressing nursing students are limited number abroad and in Turkey. Those studies cover faculty of education students rather than nursing students (Midgley et al., 1998; Midgley and Urdan, 2001; Anderman et al., 2003; Akın, 2006a; Akın, 2006b; Eryenen, 2008).Research in the field of education and psychology in recent years reveals the importance of achievement goal orientations for an effective and efficient teaching-learning process. In the relevant literature; achievement goal orientation is briefly defined as; the belief that students have to achieve success and criteria and standards they use to evaluate their performance and it is reported to contain cognitive, affective and kinetic behavior. Moreover, in the relevant literature, there are two types of achievement goal orientation including mastery orientation and performance

orientation. The mastery orientation is divided into mastery approach and mastery AVOIDANCE; the performance orientation is divided into two sub-dimensions; performance approach and performance AVOIDANCE (Midgley et al., 1998; Midgley and Urdan, 2001; Anderman et al., 2003; Wolters, 2004; Svinicki, 2005; Özgüngör, 2006; Wilkins, 2006; Akın and Çetin, 2007).

In light of this information, this research was conducted to determine the achievement goal orientation of students in public and private schools. The data obtained from this study are thought to contribute to the organization of training programs by taking into account of achievement goal orientation of secondary school students and to be a source for studies related to achieve the intended goals.

METHOD

Research design

This research paper is a descriptive study which aims to determine the achievement goal orientation level of students in public and private schools. Methodology of this research is survey research method. Survey research methods, which were conducted on a sample group chosen from a cross section of the population, are the research approaches aiming at describing a situation, which formerly existed, or still exists, in the way it is. The individual or object mentioned in the research tries to describe as in its own conditions (Karasar, 1994).

Participants

The population of the research comprised 92 male and 109 female students who are studying at Ministry of Education state school and private school during the 2014-2015 academic year in Kahramanmaraş Province. Since reaching out to all the students in Kahramanmaras is very difficult and time consuming, this study group was limited to one public and one private school only.

Instrument

The data were collected by using the "Personal Information Forms", developed by the researcher to determine demographic features of the participants. This form was constructed to gather information about gender, doing sports, the school, grade, socio-economic level and the primary factor questions to direct people to be successful. Also to determine the participants' levels achievement goal orientation, the "Achievement Goal Orientation Inventory", which was developed by Elliot and McGregor (2001), and adapted into Turkish by Akın, was used. There are four sub-dimensions of this inventory; mastery approach refers to students who view learning material as an opportunity to improve their skills and to master the learning topic. Mastery AVOIDANCE orientation refers to students who avoid the task for fear of losing their existing knowledge and skills and it includes students' beliefs that they cannot learn enough. Performance approach orientation refers to students who are motivated seem to be more successful and skillful than others. Performance AVOIDANCE orientation refers to students who avoid the performance for fear of seeming more unsuccessful and talentless than others. The scale's factor loadings are from .41 to .98, and the total item correlations ranged from .56 to .73. The

Table 1. Results of gender variable (T test).

	Gender	n	Mean	SD	t	p
Mastery approach	Female	109	3,79	,65	-,945	,346
	Male	92	3,87	,56		
Mastery avoidance	Female	109	3,41	,71	,044	,965
	Male	92	3,40	,74		
Performance approach	Female	109	2,66	,87	-1,148	,252
	Male	92	2,81	,85		
Performance avoidance	Female	109	2,98	,94	,986	,325

Table 2. Results of the doing sports variable (T-test).

	Doing sports	n	Mean	SD	t	p
Mastery approach	Yes	120	3,94	,59	3,250	,001*
	No	81	3,66	,60		
Mastery avoidance	Yes	120	3,42	,73	,342	,733
	No	81	3,38	,71		
Performance approach	Yes	120	2,72	,86	-,135	,893
	No	81	2,74	,86		
Performance avoidance	Yes	120	2,79	,80	-2,589	,010*
	No	81	3,11	,90		

*p<0.05.

inventory's Cronbach alpha internal consistency coefficients of sub-dimensions ranged from .92 to .97 and test-retest reliability coefficients ranged from .77 to .86. In this study, Cronbach alpha coefficients of the scale were calculated for mastery approach orientation subscale is .69; for mastery AVOIDANCE orientation subscale is .71; for performance approach orientation is .80; for performance AVOIDANCE orientation is . 65. 2x2 Achievement orientation scale developed to determine students' achievement orientation was considered valid and reliable and it is planned to be used in this research (Şenocak, 1998; Erefe, 2002; Altunışık et al., 2004). There are 26 items on the scale. There are no reversing entries. In this study, 5-point Likert-type scale ((1) strongly disagree, (2) disagree, (3) undecided, (4) I agree and (5) strongly agree) was used. The highest score taken from the subscales shows the individual's achievement goals: Mastery Approach: (items 1, 2, 5, 7, 11, 12, 17 and 22), Mastery Avoidance: (items 3, 10, 15, 20 and 23), Performance_Approach: (items 4, 13, 14, 18, 21, 24 and 26), Performance Avoidance: (items 6, 8, 9, 16, 19 and 25) (Akın, 2006).

Data analysis

To provide descriptive information about individuals participating in the study and to understand if there is a demographic difference in between the tests' tables or not, various inferential analyses such as T test, ANOVA, LSD and Scheffe were used.

RESULTS

According to Table 1, depending on the gender variable, it was observed that there is no statistically significant difference in the sub dimensions of achievement goals on the average scores of the participants.

According to Table 2, depending on doing sports variable, it was observed that there is a statistically significant difference in the mastery approach orientation sub dimensions of achievement goals on the average scores in favor of the participants who said yes (t=3,250; p<0.05) and in the performance avoidance orientation sub dimensions of achievement goals on the average scores in favor of the participants who said no (t=-2,589; p<0.05).

According to Table 3, depending on school variable, it was observed that there is a statistically significant difference in the mastery approach orientation (t=-2,725; p<0.05) and performance approach orientation (t=-2,322; p<0.05) sub dimensions of achievement goals on the average scores in favor of the state Schoolers.

According to Table 4, depending on grade variable, it

Table 3. Results of the school variable (T-test).

	School	n	Mean	SD	t	p
Mastery approach	Private School	99	3,71	,64	-2,725	,007*
	State School	102	3,94	,55		
Mastery avoidance	Private School	99	3,33	,72	-1,502	,135
	State School	102	3,48	,71		
Performance approach	Private School	99	2,59	,70	-2,322	,021*
	State School	102	2,87	,98		
Performance avoidance	Private School	99	2,90	,71	-,402	,688
	State School	102	2,94	,97		

*p<0.05.

Table 4. Results of the grade variable (ANOVA).

	Grade	n	Mean	SD	F	p	Difference Scheffe
Mastery approach	1.Grade	53	4,02	,54	6,001	,001*	1>2,3,4
	2.Grade	51	3,97	,50			
	3.Grade	47	3,60	,58			
	4.Grade	50	3,69	,70			
Mastery avoidance	1.Grade	53	3,50	,73	,479	,697	
	2.Grade	51	3,39	,65			
	3.Grade	47	3,37	,71			
	4.Grade	50	3,35	,80			
Performance approach	1.Grade	53	2,94	,99	3,166	,026*	1>4
	2.Grade	51	2,75	,85			
	3.Grade	47	2,79	,82			
	4.Grade	50	2,43	,69			
Performance avoidance	1.Grade	53	3,16	1,20	2,458	,064	
	2.Grade	51	2,94	,73			
	3.Grade	47	2,80	,60			
	4.Grade	50	2,75	,67			

*p<0.05.

was observed that there is a statistically significant difference in the mastery approach orientation $(F(3,237)=6,001; p<0.05)$ and performance approach orientation $(F(3,237=3,166; P<0.05)$ sub dimensions of achievement goals on the average scores of the groups. In other sub dimensions there is no statistically significant difference. Scheffe test made to find the source of the difference in the sub scales, in the mastery approach orientation, it is found that this difference is due to 1st grades, and this difference is also due to 1st grades in the performance approach orientation.

According to table 5, depending on socio economic level variable, it was observed that there is a statistically significant difference in the mastery avoidance orientation $(X^2=7,969; P<0.05)$ sub dimensions of achievement goals on the average scores of the groups. In other sub dimensions there is no statistically significant difference. U test made to find the source of the difference in the sub-scales showed that this difference is due to low socio economic levels.

According to Table 6, depending on the primary factors leading to success variable, it was observed that there is

Table 5. Results of the socio economic level variable (Kruscal Wallis).

	Socio economic level	n	Mean	SD	X^2	p	Difference U test
Mastery approach	Low	5	3,57	1,29			
	Middle	115	3,78	,57	2,111	,224	
	High	81	3,91	,60			
Mastery avoidance	Low	5	2,68	,60			
	Middle	115	3,49	,64	7,969	,022*	1<2,3
	High	81	3,33	,80			
Performance approach	Low	5	2,14	,65			
	Middle	115	2,77	,86	2,002	,259	
	High	81	2,70	,87			
Performance avoidance	Low	5	2,43	,67			
	Middle	115	2,98	,65	2,031	,259	
	High	81	2,86	1,08			

*$p<0.05$.

Table 6. Results of the primary factor leading to success variable (Kruscal Wallis).

	Primary factor	n	Mean	SD	X^2	p
Mastery approach	Myself	99	3,86	,56		
	Family	73	3,85	,57		
	Friend	10	3,37	,86	2,101	,203
	School	6	3,87	1,08		
	Society	13	3,83	,60		
Mastery avoidance	Myself	99	3,37	,71		
	Family	73	3,45	,71		
	Friend	10	3,52	,96	1,324	,905
	School	6	3,26	,87		
	Society	13	3,36	,71		
Performance approach	Myself	99	2,68	,89		
	Family	73	2,84	,81		
	Friend	10	2,52	,89	2,789	,085
	School	6	3,42	,59		
	Society	13	2,37	,86		
Performance avoidance	Myself	99	2,88	,96	1,765	,898

no statistically significant difference in the sub dimensions of achievement goals on the average scores of the groups.

DISCUSSION AND CONCLUSION

In this research, depending on the gender variable, it is observed that there is no statistically significant difference in the sub dimensions of achievement goals on the average scores of the participants. Toğluk (2009) found that depending on the gender variable, there is a statistically significant difference in the sub dimensions of achievement goals on the average scores of the participants and female students have mainly mastery approach orientation compared to male students.

Likewise, the research findings by Eryenen (2008) and Akın (2006b) correlate with the findings of this study.

Depending on doing sports variable, it was observed that there is a statistically significant difference in the mastery approach orientation sub dimensions of achievement goals on the average scores in favor of the participants who said yes and in the performance avoidance orientation sub dimensions of achievement goals on the average scores in favor of the participants who said no. Depending on school variable, it was observed that there is a statistically significant difference in the mastery approach orientation (t=-2,725; p<0.05) and performance approach orientation (t=-2,322; p<0.05) sub dimensions of achievement goals on the average scores in favor of the state Schoolers. Depending on grade variable, it was observed that there is a statistically significant difference in the mastery approach orientation and performance approach orientation sub dimensions of achievement goals on the average scores of the groups. In other sub dimensions there is no statistically significant difference. In his research Toğluk (2009) found that depending on grade variable, there is a statistically significant difference in the mastery avoidance orientation sub dimensions of achievement goals on the average scores of the groups and this difference is due to 4th grades. These results shows parallelism with Eryenen's study with students of education faculty and Lieberman's and Remendios's work with nursing students which result that the higher is the grade the lower is the mastery avoidance orientation and performance avoidance orientation. In the literature, these results may be evaluated as positive as mastery avoidance orientation and performance avoidance orientation are considered less desirable in education achievement compared to other achievement goal orientation dimensions (Lieberman and Remendios, 2007; Eryenen, 2008).

In this research, depending on socio economic level variable, it was observed that there is a statistically significant difference in the mastery avoidance orientation sub dimensions of achievement goals between the average scores of the groups. In other sub dimensions there is no statistically significant difference.

In this study, depending on the primary factors leading to success variable, it was observed that there is no statistically significant difference in the sub dimensions of achievement goals between the average scores of the students. However, Toğluk (2009) found that there is a statistically significant difference between the students' achievement orientation and the primary factors leading them to be successful. According to Kösterelioglu and Kösterelioglu (2015), all the variables of quality of school life predicted academic motivation and its subscales (exploration, self-actualization and using data). The most powerful quality of school life perception variables was found to be negative effects towards school and teachers and the least effective variable was social activity.

Finally, it is found that depending on the gender variable, there is no statistically significant difference in the sub dimensions of achievement goals on the average scores of the students; depending on doing sports variable, there is a statistically significant difference in the mastery approach orientation in favor of the participants who said yes and in the performance avoidance orientation in favor of the participants who said no; depending on school variable, there is a statistically significant difference in the mastery approach orientation and performance approach orientation in favor of the state Schoolers; depending on grade variable, there is a statistically significant difference in of achievement goals in favor of the 1th graders; and depending on socio economic level variable, it was observed that there is a statistically significant difference in favor of low socio economic level students. In accordance with these results, it is considered to be useful for educators to design the teaching-learning process with the idea of students' achievement goal orientations; to work with the students in larger group to determine their achievement goal orientation; and to make comparative studies with other college students.

Conflict of Interests

The author has not declared any conflict of interests.

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Educational Research and Reviews

Full Length Research Paper

Benefits of teaching interdisciplinary subjects collaboratively in Jordanian pre-vocational education

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The study aimed to investigate the benefits of teaching pre-vocational education (PVE) through the collaboration of the other teacher with the PVE teacher. The study adopted experimental and descriptive methodologies. An experiment was conducted through collaboration of teachers of different subjects in Pre-Vocational Education (PVE) to teach a class for a full school year (the experimental group), and another class was taught by the PVE teacher only (the control group). The number of students in each class was 35 students. To identify the effect of the experiment from the teachers point of view a semi-structured interview was conducted with each one of the participant teachers, while students responded to an attitudes scale in addition to practical and theoretical achievement tests. Results revealed that collaborative teaching that was undertaken co-operatively by the PVE teacher and teachers of other subjects better improved students' achievement and attitudes towards PVE in comparison to teaching only by the PVE teacher. It was also found that there are other benefits of multi-teacher collaboration on the delivery of PVE; among these were: better training on practical skills, better integration with other school subjects, better record of students' progress that is required for guidance purposes, in addition to better time utilization of classes.

Key words: Collaborative teaching, pre-vocational education (PVE), multi-teacher collaboration.

INTRODUCTION

Co-teaching, collaborative teaching and team teaching are the categories of the teaching approaches that have been introduced to maximize the benefits of the teaching and learning process with appropriate nature of activities. For some researchers, these are interconnected and share common characteristics, as they need collaboration between more than one teacher to be implemented. The concept of co-teaching is also considered as one form of the collaborative teaching. It is defined as "two or more professionals delivering substantive instructions to a diverse, or blended, group of students in a single physical space" (Cook and Friend; 1995, Scribner-MacLean and Miller, 2011 (p.419); Davis, 1995).

Co-teaching has been defined as a practice in which "two professionals co-plan, co-instruct and co-assess a diverse group of students. Both teachers provide

substantive instruction to all students on a daily, consistent basis. Neither is considered the main teacher of the class; they are equals" (Murawski and Dieker, 2008, p. 29). Friend and Cook (2010) have mentioned co-teaching as a form of approach to provide advanced and specialized services to each student in a broad education classroom (Conderman, 2011). It includes two or more teachers working collectively to convey directions to a heterogeneous gathering of students in the instructional space. Educators share their aptitude, offer materials, and create regular instructional objectives (Friend and Cook, 2010 cited in Scribner-MacLean and Miller, 2011, Nierengarten, 2013). As co-teaching requires more than one teacher to be implemented, it may also take the form of team teaching. In team teaching, teachers have equal roles in the execution of instruction. Equality becomes evident as teachers utilize the same strategies of instruction, monitoring, and interacting with students (Cole, 2009; Murawski and Hughes, 2009).

For as long as two decades, co-teaching has turned out to be a viable methodology for K-12 education, in which co-teaching was utilized to enhance practice and guidelines better help for students. Co-educators work to "create a typical syllabus, incorporate their different viewpoints, select subjects, and offer list of exercises" (Dugan and Letterman, 2008). Gately and Gately (2001) characterize co-teaching as a variety of group that includes two or more teachers offering arranging and guideline for gathering students in the same session in a single physical space. Furthermore, co-teaching has witnessed remarkable development by introducing some models of delivery for teachers to follow and implement. There are various structures or "models" that are perhaps used in a set up of conducting co-teaching to identify the participation of each professional in providence of instructions (Kamens et al., 2013). The most universal ones are those that have been made prominent by Friend and Cook (2010, p. 7) and incorporate one instruct/one watch, one educate/one aid, station instructing, parallel educating, option instructing, and group educating. Different elements that influence the adequacy of co-showing incorporate the substance mastery of the educators, their level of showing background, accessibility of joint arranging time, and co-educator similarity (Friend and Cook, 2010; Mastropieri et al., 2005).

The intention of co-teaching has been to meet the needs of all students and to ensure all students reach their potential (Abbye-Taylor, 2014). There are essential requirements that are required to benefit from co-teaching; energy and an uplifting demeanor are crucial when two separate educators are occupied with co-operation (Carley, 2013; Friend, 2008). One instructor's hesitance or lack of interest to team up influences the other educator and furthermore, it obstructs students' learning (Syh-Jong et al., 2006). Welch (1998) expressed that a few obstructions to fruitful joint effort incorporate contrasts in instructive ideas, a commonsense

methodology and individual disposition.

Researchers have stated that co-teaching is producing positive impact upon the performance of the students in High School (Syh-Jong, 2006, p.7). They have also noted the benefits to 'English Language Learners' (Zehr, 2006) whereas diversity in the student population has evidently shown academic growth (Zehr, 2006). Instructors in different domains, for example, science and arithmetic, have likewise noted the focal points of co-instructing the students (Scantlebury et al., 2008; Syh-Jong, 2006).

Chu et al. (2011) investigated the effect of combining learning of collaborative teaching with inquiry project-based learning on the development of primary students' information literacy and IT skills. A collaborative teaching approach involving three teachers in different subject areas was adopted. The results indicated that this program had a positive impact on the development of different dimensions of the students' information literacy and IT skills. Wallace (2007) investigated the effect of interdisciplinary team teaching team configuration upon the social bonding of the middle school students. One of the configurations in the study was to form a team of four teachers, each specializing in a core subject to teach the subjects to all students. All levels of analysis indicated that interdisciplinary teaching team configuration produced a significant effect on the students' social bonding.

Uwanieiye and Ojikutu (2009) investigated the effect team teaching on the academic achievement of students in an introductory technology course. The results showed that there was a significant difference between the performance of students taught using team teaching and those taught using conventional method in favor of team teaching. Syh-Jong (2006) studied the effect of incorporating web-assisted learning with team teaching in seventh grade science classes. The results showed that the average final examinations scores of students experiencing web-assisted team teaching were significantly higher than that of those who received traditional teaching. Also Syh-Jong (2008) studied the effect of integrating technology and team teaching into science teacher education methods course. The results revealed that there was a significant effect of using team teaching in integration with technology on enhancing the teaching practice of student-teachers, in addition to its effect on enhancing friendship through interaction between student teachers.

Besides all benefits of co-teaching, there is one that comprises opportunities to fluctuate presentation of the content, variation in giving instructions, scaffold learning experiences and keeping a check on comprehension of the students (Hartigan, 2014). Working with co-educators can similarly permit learners to have more rich criticism from teachers with diverse encounters and perspectives. With the capability to impart obligations, co-showing permits superb guideline to proceed as teachers oversee different commitments (Conderman, 2011).

Due in part to its relatively recent emergence, empirical research on the effectiveness of co-teaching-in terms of quantitatively-measured student outcomes- is limited. Indeed, very few large-scale studies on co-teaching have been conducted to date, and smaller-scale studies have yielded mixed results (Hanover Research, 2012, p.5).

Magiera et al. (2005) found that in secondary math courses, team teaching specifically is rare. The special education teacher is very rarely the primary instructor in co-taught mathematics classes, serving instead as a support for the general education teacher during instruction. The study found that in such classes, the most common role played by both teachers is that of monitoring student work, either by reviewing homework or observing students solving problems independently. In a mathematics class, the same study stated, "the role of the special education teacher is not to become a quasi-mathematics teacher (there is one already in the classroom) but to explicitly teach processes that help students with disabilities understand mathematical concepts (p. 6).

Zigmond and Magiers (2001) mentioned that several researchers have attempted to perform meta-analyses of studies on co-teaching. One of these, conducted in 2001 by the Council for Exceptional Children (CEC), identified four studies "in which the effectiveness of co-teaching was measured empirically and compared statistically with a control condition. Three of these studies took place in elementary schools and showed co-teaching to be as effective-but not *more* effective-than resource room instruction or consultation with the general education teacher. One study examined co-teaching in a high school setting, and found a decline in student performance. Based on the results of these studies, the CEC report advised educators to exercise caution when implementing co-practitioners how to do it, there are virtually no convincing data that tell the practitioner that it is worth doing (p. 46).

Murawski and Swanson (2001) also examined data-based studies on the effectiveness of co-teaching. The report found that only six of 89 reviewed articles "provided sufficient quantitative information for an effect size to be calculated. All six studies took place in public schools over the course of one year, except for one, which lasted only three weeks. Each class under examination was led by a general education teacher, a part-time teaching assistant (for four hours a day), and a special education teacher (for one to two hours a day). Special education students were primarily students with learning disabilities and/or low achievement. The studies encompassed all grade levels: one examined grades K-3, two examined grades 3-6, and three examined grades 9-12.

Prevocational education (PVE) in Jordan is one of the curriculum subjects taught at the basic education stage, it is a practical form of provision of subjects related to different vocational sectors. It does not aim to equip students with employable skills. It is delivered as modularized training packages in agriculture, industry, home economics, economics, and health and safety (Ministry of Education, 1990). The provision of PVE in Jordan is intended to achieve a variety of general objectives. These objectives can be summarized in: inculcating positive attitudes towards manual work and workers, enabling students to acquire practical and applicable skills with economic and social benefits, providing the students with an opportunity to discover their affinities and aptitudes in order to facilitate their selection of prospective careers based on informed and realistic experiences. In addition, PVE aims at acquainting students with the practical application of knowledge obtained from other subjects, improving students' problem-solving and values-commitment abilities, enhancing their abilities to deal with modern technology, improving their consciousness of domestic life requirements, improving their "sense of responsibility" towards the environment, and enabling them to communicate through drawings and symbols (Ministry of Education, 1990).

Because of the wide spectrum of objective, and teacher's tasks, the curriculum of (PVE) is distinguished from the traditional academic curriculum in that it includes not only theoretical Knowledge and basic subject skills, but also practical ability in real-life situations. Pre-vocational education does not take the form of a linear curriculum, and thus the interaction of all relative components will continuously occur. The educational system in Jordan struggle to find the suitable way to prepare teachers who are able to teach PVE. It is currently taught by two types of teachers: teachers who are specialized only in one of its subject knowledge domains at a diploma level without any educational qualification, or by teachers who are PVE specialists and educationally qualified. However, both types of teachers find it difficult to teach all domains of the PVE curriculum (Doghlos, 2004).

Previously, a perceptual study was led to find the method of reasoning to embrace group showing for the most part in conveyance of PVE (Alsa'aideh, 2010). It was discovered that educators of distinctive subjects in the school can partake in a group to show the fields (subjects) of PVE: Science instructors saw themselves capable at a high level to instruct the agrarian subjects; Arts training educators were seen the most ready to work together in showing a portion of the mechanical subjects; Math instructors saw themselves the most ready to educate the finance related subjects; Science educators are the most ready to teach Home-economics subjects; Also, health and safety related subjects that are included in the PVE curriculum were perceived suitable to be taught collaboratively with science teachers. This encouraged the researchers to investigate the effectiveness of a synthesis of team teaching models on the delivery of PVE in a real school experiment.

Problem of research

It was discovered that educators of distinctive subjects in the school can participate in a group to deliver the (subjects) of PVE curriculum from the teachers' points of view (Alsa'aideh, 2010). Therefore it is needed to evaluate the impact of co-teaching on students' achievement since it is one of the new methodologies to deliver subjects. Students' achievement promotion should be the core focus of the educational institutions because their effectiveness is inevitably measured by students' achievement (Cole, 2009; Conderman, 2011). As PVE (Pre-Vocational Education) is an interdisciplinary useful situated subject, the status of showing PVE in Jordan is not fulfilling as far as students' disposition towards the subject, a variable that contrarily influences their enthusiasm towards the conveyed exercises. Therefore, it is also needed to investigate the effect of co-teaching on the students' attitudes. In this manner, the functional capabilities of students are powerless, and they decline to enlist in professional training at the end of the fundamental education. This non-fulfilling circumstance is ascribed in many studies (Al-saydeh, 2002; Doghlos, 2004; Ahmed and Al-saydeh, 2007, Tweisat, 1998) to the weak eagerness and capacity, the huge quantities of students in classes, the low nature of showing exercises, and the deficiency of time designated for PVE, the irrelevance of teachers' specialties to the curriculum subjects, the lack and the lack of facilities in schools (Tweisat, 1998, Doghlos, 2004).

PVE in Jordan is currently taught by two types of teachers: teachers who are specialized only in one of its knowledge domains at a diploma level, or by teachers who are prepared to be a teacher for all of the subject domains. Therefore, it was found that both types of teachers are of low capability to teach all domains of PVE (Doghlos, 2004). This negatively affects the willingness of PVE teachers to teach the subject, willingness of teachers is a problem that is not easy to resolve. However, collaboration with other teachers could enhance willingness since individual motivation usually improves when tasks to accomplish appears to be easier in comparison (Geelan, 2003), the case that could happen in teachers' collaboration. It is also expected that teaching PVE collaboratively could enhance students' engagement in learning because two teachers in the class (or workshop) will monitor the activities and formatively assess the students' progress towards achievement of the learning outcomes. This actually bridges the gap and develops integration between school subjects that could be obtained (Kaufman and Sawyer, 2004; Hoachlander, 1999; Eisman et al., 2003).

This study examined -through a real yearly experiment- teaching PVE collaboratively, and investigated its general benefits in addition to its specific effect on students' achievement, skills mastery and their attitudes towards PVE.

Research questions

The study was expected to answer the following research questions:

1. What are the general benefits of multi-teacher collaboration on delivery of PVE as specified by participated teachers?
2. What is the effect of multi-teacher collaboration on the students' attitudes towards PVE?
3. What is the effect of multi-teacher collaboration on the students' achievement in PVE?
4. What is the effect of multi-teacher collaboration on the students' mastery of practical skills?

Subjects of the study

The experiment was undertaken in two classes of the seventh grade in one of the public schools in Amman, Jordan. One of the classes was the "experimental group" with which collaborative teaching was experienced, while the other class "the control group", was taught by the PVE teacher only. Each group counted 35 students whose age was around 12 years old.

Five teachers participated in the experiment: the science teacher participated in teaching the "agricultural" units, "simple tools", and "metal works", the arts-education teacher in "painting and carpentry", and "engineering drawing".

The math teacher participated in the units of "financial" and "administrative" affairs, and the physical education teacher in the units of "health and safety". Those were in addition to the PVE teacher. All teachers who participated in the experiment were of the same academic level (Bachelor's degree) and had between 3 to 6 years of teaching experience.

The experiment and data collection

For the experimental group, before launching the delivery of each unit of the curriculum, the dual sub team of teachers planned the activities and specified the role of each teacher. It was also ensured that both teachers attended the lessons of the unit that is, two teachers participate in the delivery of the lesson to students taking different roles in the classroom or the workshop. The total lessons attended by the other teachers accompanying the PVE teacher were 58 lessons which constituted 90% of the total PVE lessons in the year. However, lessons for the control group were completely planned and delivered by the PVE teacher only.

Students in both classes responded twice to the attitudes' scale, one before teaching "pretest", and the other after teaching "post-test". However, the students sat for the practical and theoretical achievement tests only

after giving their routine lessons because of the difficulty and shortage of time. To ensure the equivalence, the means of the students' scores in the sixth grade were used. Difference was not statistically significant at significance level (α=0.05) neither in the achievement in the sixth grade nor in the pre-teaching attitudes' level.

Instruments of the study

Four instruments were developed to collect data (attitudes scale, achievement written test, group of rubrics for assessment of practical skills, and interview schedule for teachers). Details are as follows:

Attitudes scale: To collect data about the effect of collaborative teaching on the students' attitudes toward PVE, a scale was developed including (40) items that cover three dimensions: importance of PVE for the student, importance of PVE for the family, and the requirements of studying PVE compared to studying the other subjects. Each item was followed by a five degree agreement scale (strongly agree, agree, hesitant, disagree, and strongly disagree). Validity of the scale was insured by a panel of experts, and the reliability was also tested through the internal consistency coefficient (Cronbach-α) method on 250 students in different schools. The reliability coefficient was (0.82).

Achievement written test: An achievement written test was designed for the content of the seventh grade textbook. The test composed of 100 items. It was piloted on 250 students. Difficulty indices of the items ranged from (0.26-0.79), the acceptable values are (0.20-0.80). Item discrimination indices ranged (0.30-0.85), while the acceptable values of the discrimination index is above 0.20.

Practical skills mastery rubrics: Five practical tasks from those included in the curriculum were selected to assess the students' mastery of skills: to serve a bee cell, to build the circuit of a florescent lamp, to produce an apricot jam, to prepare a feasibility study for a small project, and to check the hygienic features of meat. Each task was allocated 20 marks. Rubrics were developed for each of the above tasks. They were consulted by. To examine the reliability of the rubrics, two examiners observed a student doing each one of the tasks. Agreement percentages between the two assessors about the marks estimated of each item were calculated. Percentages ranged from 0.79 to 0.95.

Teachers' interview schedule: A semi-structured interview schedule was developed to initiate dialogue with the group of the teachers who participated in the experiment. Questions addressed the benefits (if perceived existing) of the collaboration with the PVE teacher compared to

teaching it only by PVE teacher in terms of: Integration of subjects, and life benefits of subjects, enhancement of the practical training on skills, the record of progress required for vocational guidance, facilitation of PVE teacher tasks, time efficiency of PVE lessons, enhancement of students attitudes, enhancement of students achievement, and the general enhancement of PVE delivery. Specifically, the main guiding questions included in the interview schedule were:

- Do you find collaboration in teaching PVE advantageous compared to teaching by the PVE teachers only?
- Would you please mention the main advantages of teaching PVE advantageous compared to teaching by the PVE teacher only?
- Are there any specific advantages of collaboration in teaching PVE regarding (students' learning, the PVE teacher performance, the knowledge integration, vocational guidance)?
- In your opinion why this advantage happen, and how?
- As a result, do you think that collaboration in teaching PVE improves its delivery?

Because of the design of the interview question, it was found that teachers on what they found when they collaborate in the delivery of the PVE lessons, and not on the conventional method (teaching lessons by the PVE teacher only). This helped the researchers to extract the themes directly from the manuscripts of the interviews.

For validity purposes, the interview schedule was consulted of by the teachers themselves who participated in the experiment since they know the special purposes of the schedule.

For reliability purposes, the interview transcript for each teacher was reviewed by the teachers to ensure agreement about the content of the transcript.

Data analysis

To measure the effect of collaborative teaching on achievement and students' attitudes towards PVE, T-tests were conducted for the means of the experimental and the control groups in the post-teaching results. Data collected from the interviews were analyzed qualitatively to specify the main benefits mentioned by teachers; quotations were utilized to interpret the results.

FINDINGS AND DISCUSSION

First: General benefits of multi teacher collaboration on PVE delivery

There are different general benefits for the collaboration of teachers of different subject. In the interviews with the participant teachers, the following benefits were

mentioned in comparison to teaching by the PVE teacher only:

1) *Higher motivation and enthusiasm*: Participating teachers highly concentrated on the fact that pre-vocational education encounters with the problem of negative attitudes of students. When teaching the content of PVE subjects in relation to other subjects (mainly academic), students will better accept this content and may learn it with better motivation and enthusiasm, and intuitively this leads to better achievement and tasks' accomplishment. The mathematics teacher ascertained that *"Although it is said that students do not like PVE, I felt that they have the same motivation as in mathematics lessons when they do functional calculations in the PVE lessons".* Also having two teachers in the same class could show students more enthusiasm and better monitoring of the teaching/learning activities, in addition to more personal contact with the teacher/s.

Research reviews on collaborative teaching and integrating curricula in school-to-career initiatives (Eisman, 2000; Stasz et al., 1994, Stern et al., 1994) have concluded that one of the main benefits for students is the better motivation and enthusiasm that leads to better accomplishment of tasks and projects. Relating to this, Wallace (2007) found that interdisciplinary teaching team configuration produced a significant effect on the students' social bonding, which is a factor that empowers students in group to do better in their teaching/learning tasks.

2) *Better integration between vocational and academic subjects*: When teachers of other subjects participate in explanations of PVE subjects they, inevitably, relate these subjects to their fields of specialty. The Arts education teacher mentioned that *"in the Arts education lessons, students were effectively discussing what we have done together when I was helping them in the lesson of engineering drawing during my collaboration with the PVE teacher".* This will take place in two aspects, first: collaborative teaching will clarify the use of scientific concepts, theories and laws, to produce useful products in careers. Syh-Jong (2008) and Felder et al. (1996) and Goets (2000) achieved similar results in experiencing collaborative teaching in technology and engineering subjects. Second: collaborative teaching with teachers in social subjects will better integrate teaching to produce better understanding of ethics and values of work. This result was achieved by Clarke and DeNuzzo (2003), when trying collaborative teaching in inclusive class-rooms, and by Eisman et al. (2003) when examined the participation of academic, vocational and special educators in a year long business school and university-based institute on integrated training. In addition, collaboration with other teachers might make the PVE teacher more powerful to integrate the subjects because of the confidence in the subject-matter that the teachers' team in the class will possess due to the depth of

knowledge of the teachers of academic subjects who collaborate with the PVE teacher.

3) *Better vocational guidance*: One of the other benefits is stated that one of the main objectives of PVE curriculum in Jordan is to utilize the student's resulting aptitudes to achieve better vocational guidance. This demands that teachers should record detailed information about students' progress in different subject-related tasks. If one teacher (PVE teacher) is the only responsible for such recording, it will not be done continuously. When more than one teacher collaborate they will do better detailed recording, this will be of a great advantage in guiding students to the various streams of education (either academic or vocational). The PVE teacher mentioned that *"when I have another colleague with me in the workshop, I was able to observe students while they were working, this enabled me to decide their weaknesses and strengths, I mean I can discover the abilities of a higher percentage of students".* Also, having another teacher participating in the lesson' delivery could save some of the PVE teacher time, this will enable him/her to focus on recording the students' progress and to guide students who needs more attention than others. Clarke and DeNuzzo (2003) mentioned an advantage similar to better recording, when stating that one teacher could be engaged in teaching, while the other observing both learning progress and behavioral problems.

4) *Better observation of behavior and better time efficiency*: Better observation of behavior results in better control on problematic students. This factor leads to better students' engagement in learning, which in all means, is equal to better time of PVE lessons. The teacher of PVE mentioned that *"you know, students are not very interested in PVE as a non- academic subject, therefore; they try to play here and there in the PVE lessons. When I am a lone in the workshop I cannot control the problematic student in a proper way, they affect the students who want to learn. When another teacher is with me their behavior becomes better, and we focus on teaching".* Therefore, teachers insured that collaborative teaching leads to better time efficiency. In addition, aforementioned benefits of collaborative teaching in PVE, teachers agreed that collaborative teaching enhances PVE delivery. This was at the end of the interview with each teacher (do you think that collaboration in teaching PVE produced better delivery of the subject?) all teachers answered positively. The PVE teacher himself said *"certainly it is better that I teach it alone even in terms of better knowledge in the different domains of the curriculum".*

This also agreed with what Wallace (2007) found of the positive effect of collaborative teaching on the students' social bonding.

5) *Better training on skills:* Other expected advantage of collaborative teaching in PVE was that better practical

training on skills will be achieved. This will take place when teachers of better relevant specialties participate in teaching PVE subjects. In many studies, (Al-saydeh, 2002, Tweisat, 1998, Ahmed and Al-saydeh 2007), it was reported that PVE subjects are delivered only as theoretical content among the main reasons that was the lapses in teachers' abilities. Although it was stated that collaborative teaching requires a long time to have tangible results (Eisman et al., 2003). It was found that collaborative teaching resulted in better mastery of knowledge, particularly in accomplishment of practical tasks (Felder et al., 1996; Goetz, 2000; Syh-Jong, 2008). Also, Chu et al. (2011) found that collaborative teaching improves the information literacy and information skills when they tested it on primary students. Furthermore, the students' results on the practical skills' test that will come later in this study will be an empirical evidence of this aspect

In summary, this part of the results that mainly utilized the interviews' results revealed that collaborative teaching could help achieve better PVE delivery in different aspects: expected higher students' achievement, expected better attitudes towards, PVE, better practical training, better life benefits of subjects, better students' recorded achievement, and better attitudes. It was also found that collaborative teaching will make the job of PVE teachers easier as teachers work together and share with each other their experiences, knowledge, and best practices.

Second: The effect on the students' attitudes towards PVE

Table 1 shows the results of t-test between the mean scores of the experimental and the control groups on the attitudes scales. Results show that there is a statistically significant difference in the level of attitudes towards PVE between the group of students taught by the team of teachers and the group taught by only PVE teacher. This could be referred to the higher level of engagement with learning occurred to the students in the collaborative teaching class. As mentioned before, better observation may be the main factor that stands before this level of engagement. Also, in the case of the existence of two teachers involved in the class students had the chance to practice skills for a longer period of time through the lesson period. It is well known that practicing things for longer time makes the students more familiar with skills. In addition, having two teachers in the class/workshop gave students the opportunity to receive better detailed explanation of ideas through more teacher contact with the students' groups, having deeper discussions with teachers, and having more negotiation about the importance of the tasls they undertake in the PVE lessons. Moreover, the teachers emphasized that they had better chances to talk to the students who showed carelessness during the PVE lessons, as more friendly

discussion occurred with these students they showed better engagement to the activities, a factor that indicated attitudes' improvement.

In informal chats with students, they ensured that the contributions of other teachers who change by curriculum units made them like the course and its content. In a study exploring students' perspectives of co-teaching, Murawski and Dieker (2008) learned that students who were educated by effective co-teaching teams specified their overall approval with the co-teaching instructional practice. Satu et al. (2012, p.30) found that collaborative teaching help to meet the learning styles of students through the teaching/learning activities, a factor that leads to an enhancement of attitudes towards the course. Also, Uwanieiye and Ojikutu (2009) found that there was a significant effect on the overall performance of students taught using team teaching. Moreover, Arhar (1994) cited in Wallace (2007) found that attitudes of students towards their peers, teachers, and their schools became stronger through teacher teaming.

Third: The effect on students' achievement

Table 2 shows the summary of the t-test between mean scores of the control group and the experimental group on the achievement test after teaching. Results shows that there is a statistically significant difference between the mean scores of the experimental group that was taught by the team of teachers and the control group that was taught by the PVE teacher only. The enhancement occurred in the students' achievement could be referred to the chance of students to be observed for longer time during task undertaking, in addition to better explanation of the material content from the collaboration between the PVE teacher and the other teachers in the team. Also, students showed better enthusiasm with participation in learning activities when having another teacher in the workshop, because they consider him as an observer guest, a factor that was ascertained by teachers themselves as a reason for better behaviors and discipline inside the workshop. The PVE teacher said: *"Students were totally different in their behavior when the colleagues are with me. They show a high degree of engagement in learning. They consider him a guest in the workshop'.*

Another teacher insured that by saying: *"I feel that students appreciated my existence in the workshop and my trial to help them. They pay a high degree of attention to my explanation, particularly when they feel that their teacher (the PVE teacher) is busy with other groups of students".* Moreover, results showed that enhancement of practical abilities of students could be referred to the detailed help by the teachers to students to amend their faults during training. One of the teachers expressed that: *"Students who made faults in their tasks found better opportunities to correct by the collaborative colleague".* Uwanieiye and Ojikutu (2009) found that team teaching

Table 1. Summary of t-test between the mean scores on the attitudes scale of the control group and the experimental group.

The group	Mean scores	Standard deviation	t-value	Calculated level of significance
Experimental	3.51	0.39	3.34	0.001
Control	3.07	0.71		

Table 2. Summary of the results of t-test between mean scores of the control group and the experimental group on the achievement test.

The group	Mean scores	Standard deviation	t-value	Calculated significance level of difference
Experimental	83	14.00	4.84	0.001
Control	70	10.25		

Table 3. Summary of the results of t-test between mean scores of the control group and the experimental group on the practical tasks test.

The group	Mean scores	Standard deviation	t-value	Calculated significance level of difference
Experimental	84	16.01	4.85	0.001
Control	71	12.25		

enhanced the overall performance in an introductory technology course. In a web-assisted learning environ-ment incorporated with team teaching, Syh-Jong (2006) found that the average final examinations scores of students in the seventh grade science classes were significantly higher than that of those who received traditional teaching.

Forth: The effect on students' mastery of skills

Table 3 shows the summary of the t-test between mean scores of the control group and the experimental group on the practical tasks test after teaching. Results show that there is a statistically significant difference between the mean scores of the experimental group that was taught by team of teachers and the control group that was taught by only PVE teacher in favor of the experimental group. This is due to the fact that teachers followed different approaches and interactive methods that helped students to learn the subject easily, more training time of each group of students as two teachers train students, better detailed training on the steps of skills, more chances to have feedback about what students do and slower and detailed correction of their mistakes. This was mentioned specifically by the arts education teacher who said: *"while groups of students were working, we both felt comfortable to help them showing them specific details, give them detailed feedback on their work, make slower presentations when needed".*

Team teaching has been cited as extremely beneficial by many scholars and researchers. Research has shown that team teaching is an effective way of constructing deep learning of concepts while learning alternative ways to teach the same subject matter (Syh-Jong, 2006). "Specifically, compared to the traditional classroom where the non - native English teacher alone was respon-sible for all of the instruction process, a collaborative team work in which language teachers with different linguistic and cultural backgrounds is able to better respond to students' need or interests" (Jui-min Tsai, 2007). Moreover, Chu et al. (2011) tested a collaborative teaching approach involving three teachers in different subject areas. The results indicated a positive impact on the development on the students' information literacy and IT skills.

Austin (2001) adds another reason to the mastery of skills when teaching inter-disciplinary subjects by teams; she mentioned the impact of seeing grown-ups team up and coordinates on an objective, which a few students may not see in their normal single-instructor classroom. An advantage of collaborative teaching in PVE is to have better clarification of life-benefits of other subjects. This can be achieved when teachers of other subjects utilize previous knowledge they taught in their original subject to introduction, explanations or application of the PVE lessons. This shows the real uses of the theoretical knowledge students learn in academic subjects. This will take place in an interactive way due to the high variety of subjects of PVE (agricultural, industrial, health and safety, home economics and economics). This advantage was also concluded by (Berentsen, 2006) when used

complimentary collaborative instructing with scholastic central subjects utilizing flight ideas, and by Felder et al. (1996) when utilized synergistic educating as a part of a coordinated Freshman designing educational program. They mentioned that collaborative teaching shows the benefits of theoretical subjects in solving real life problems.

CONCLUSION AND IMPLICATIONS OF THE STUDY

Co-teaching has been implemented in all educational settings with students from different backgrounds like students with special needs, normal students and college students. In this sense, co-teaching is an administration conveyance choice intended to address the needs of students in a comprehensive classroom by having a general instruction educator and an extraordinary administration supplier. The impact is eventually greater than in normal circumstances since the other educator is more specialized in the subject matter.

Prevocational education is not considered an academic subject amongst students, parents, some teachers and some of the educational leaders at various levels. Since PVE is encountered with number of problems with respect to managing negative attitudes among the students and insufficient training for skills enhancement (Al-saydeh, 2002; Ahmed and Al-Saaideh, 2007; 2012, Doghlos, 2004), it is predictable that 'multi teacher collaboration may facilitate the attempts of changing the negative impression of PVE as a marginal subject, and it is also able to allow students to be experiencing diverse activities about teaching that could gratify and compliment to their learning styles.

More importantly, it may create better opportunities for teachers to teach practical skills rather than confronting their teaching to only theoretical bases. That is because teachers of other school subjects may master some subject-relating skills that are difficult to master by the PVE teacher. This is specifically true for PVE teachers who are originally specialized only in one of the curriculum fields.
Results of the study may be useful for different parties like:

- School administrators who might find a novel way to deliver PVE rather than to use the traditional approach to deliver PVE that is an interdisciplinary subject by one teacher specialized in one field of the curriculum.
- Teacher of PVE, to change the status quo of their professional practice in schools by planning, teaching, and evaluating collaboratively. This also could change the paradigm of teacher isolation in his/ her classroom, a factor that hinders the professional development.
- Curriculum developers who could rethink PVE through rethinking teaching of the subjects collaboratively, a step that could lead to a reform of the whole school curriculum by more integration.

- Students who could learn collaboration (rather than competition) by seeing others (teachers) collaborate.

Despite the advantages for teachers and students, co-teaching has some disadvantages and requirements. Among these are the (lengthy) time required for planning, because the PVE teacher can easily take the decision about his lesson activities, but to make a compromise between two opinions is difficult. Another difficulty was the conflict that might take place in teachers' timetables, which requires a high degree of commitment of both teachers and the school administration to the collaboration. Also, among the difficulties that could face such an experiment is the compatibility of team members, the degree of interest of members to connect curriculum content to real life, and most importantly, the need for training of the team of teachers in order to implement teaching using this new approach for teachers in the schools, particularly in schools that suffer from shortage of teachers. Additionally, there might be some disadvantages for students, like the unwillingliness to try out new learning techniques implied by teams, and the frustration and discontentment about having more than one teacher in the class, these disadvantages were also mentioned by Sparker (2003).

RECOMMENDATIONS

Collaborative teaching was found to help achieve better PVE delivery in terms of enhancing students' achievement and attitudes towards PVE. Therefore, it is recommended to have the following in order to promote these benefits:

- To approve an approach to support collaborative teaching that entails slight changes in the school system and curriculum (for short term)
- To concentrate on collaboration between teachers, as an instructional methodology, in the distribution issued by the Ministry of Education, and by educating instructors in Jordan, keeping in mind the ultimate goal of creating better acceptance to this methodology
- To put an arrangement for appropriation of collaborative teaching inside the future educational program advance-ment for PVE, as well as for all relating subjects in order to achieve the final target of the integrated implemented curriculum.
- To create a successful motivating framework for instructors who take part in community-oriented education to fortify their fulfillment.
- To persistently assess the execution of collaborative teaching so as to tag challenges and to get desired results.
- To secure better social communication among instructors in schools in light of the fact that similarity between instructors is an absolute necessity for community oriented instructing achievement.

Conflict of Interests

The authors have not declared any conflicts of interest.

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