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Abstract- The study was conducted to examine if there are significant relationships among perceptual learning styles preferences and academic achievement of students. A sample size of 283 participants among 972 first year students at Woldia College of teachers' education, Ethiopia in 2016/2017were selected using stratified and simple random sampling techniques. The study employed quantitative approach which followed a correlational design involving two instruments to collect data for the study: Questionnaires (perceptual learning styles inventory related to auditory, visual and kinesthetic learning styles)and document analysis. Pearson product moment correlation coefficient and independent samples t-test were used to analyze data. The Pearson correlation analysis reported a significant positive relationship between students' perceptual learning styles preferences and academic achievement. The independent samples t-test result indicated that there was statistically significant difference between male and female students mean scores in kinesthetic learning style. In other words, male students mean score ($M=2.7671$, $p<0.05$) was significantly higher than female students did ($M=2.6034$, $p<0.05$) in using kinesthetic learning style. However, there was no statistically significant difference between male and female students mean scores in visual and audio learning styles.

Keywords: *Perceptual learning styles preferences, sex, academic achievement.*

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Relationships among Perceptual Learning Styles Preferences and Academic Achievement of Students at Woldia College of Teachers Education, Ethiopia

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Abstract- The study was conducted to examine if there are significant relationships among perceptual learning styles preferences and academic achievement of students. A sample size of 283 participants among 972 first year students at Woldia College of teachers' education, Ethiopia in 2016/2017were selected using stratified and simple random sampling techniques. The study employed quantitative approach which followed a correlational design involving two instruments to collect data for the study: Questionnaires (perceptual learning styles inventory related to auditory, visual and kinesthetic learning styles)and document analysis. Pearson product moment correlation coefficient and independent samples t-test were used to analyze data. The Pearson correlation analysis reported a significant positive relationship between students' perceptual learning styles preferences and academic achievement. The independent samples t-test result indicated that there was statistically significant difference between male and female students mean scores in kinesthetic learning style. In other words, male students mean score ($M=2.7671$, $p<0.05$) was significantly higher than female students did ($M=2.6034$, $p<0.05$) in using kinesthetic learning style. However, there was no statistically significant difference between male and female students mean scores in visual and audio learning styles. Finally, it was recommended that teachers are expected to use variety of teaching methodology that can accommodate individual differences in the learning process. And also, counselors are expected to arrange individual and group counseling sessions, orientation and short term training program to raise students' awareness on perceptual learning style preferences.

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I. Introduction

Recognizing the students' learning style may very well aid the teachers in becoming more sensitive to students' differences in the class room, thus promoting enhancement to teaching practices that best suit the students learning styles. As stated by Cuthbert (2005), awareness of learning styles is vital for allowing adjustment in the educators' pedagogical approaches. Garth-Johnson and Price(2000) pointed out that learners' unique learning style and their academic achievements are powerfully related. Lethman (2011) also stated that learners' individual characteristics and their learning styles need to be taken into consideration during instruction. Perceptual learning styles are as an individual's preferred model for perceiving, organizing, and retaining information.

Perceptual learning preferences styles are also equip students on how to motivate to learn, determine and dwell on their strengths and interests (Cauresma, 2008). Moreover, Kolb(1984) and Honey and Wing *et al (*1992) describe perceptual learning style as an individual preferred or habitual ways of processing and transforming knowledge. On the other hand, Keefe (1987) emphasizes perceptual learning styles as cognitive, affective, and psychological traits that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment. Furthermore, Dunn and Dunn (1986) hold that each individual's concentration on mental processes, internalization and retain of new and difficult information stem from his specific perceptual learning style.

Bill(1998) concluded that knowing the perceptual learning style of the students can be beneficial in several ways. The instructor can orient his lecture toward those students with the modal learning style keeping in mind that some students may be at disadvantage. By varying the explanations, the instructor can reach a larger proportion of the students. Knowing the perceptual learning styles can also be very helpful when working on an individual basis with the students. Students should know their perceptual learning styles in order to make better use of their study time.

Turnbull (2009, p24) refers to the Coffield Review (2004), a systematic review of learning styles and pedagogy in post-16 learning which identified 71 models of learning styles and characterized 13 of those as major models. She also makes reference to Hargreaves (2005) who suggests that there is now a range of different languages in the consideration of learning styles:

- Activists theorist, pragmatists, reflectors
- Divergers, convergers, assimilators, accommodators
- Verbalizers, imagers, analytics, wholists

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- Analysts, changers, realists
- Visual, auditory, kinesthetic

The most popular of the learning styles categorization is the last one – visual, auditory, tactile/kinesthetic but remember they are not fixed categories. Everyone uses a range of learning styles therefore teacher educators need to encourage trainee teachers to in turn encourage their students to develop flexibility in thinking and behavior.

As a model VAK provides a useful framework for helping us reflect about how we think and learn and it is therefore a popular and widespread tool. The model suggests that we receive information through our senses – what we see, hear, feel, taste and smell, that is we construct our thoughts: by generating pictures (Visual), by hearing sounds (Auditory), by means of physical sensations and feelings (Kinesthetic) and by a combination of all three which will be unique to us.

In the Ethiopian context, little has been done to examine the relationships among perceptual learning styles preferences and students' academic achievement. Students do not know their most preferred perceptual learning style for better academic achievement. This showed that students do not consider and use their perceptual learning styles in doing their learning activities. The present study specifically assesses the relationships among perceptual learning styles preferences and students' academic achievement in Woldia College of teachers' education, Ethiopia. Though, learning style has been defined by various scholars, the present study focuses on different perceptual learning styles as visual learners, auditory learners, and tactile learners. With the overall intent of investigating if there are relationships among perceptual learning styles preferences and academic achievement of students, the present study attempts to answer the following research questions.

1. Is there a significant relationship between perceptual learning styles preferences and academic achievement of students?
2. Is there a significant difference between male and female students in perceptual learning styles preferences?

II. Materials and Methods

a) Population, samples, and sampling

The population of this study were freshman regular diploma students of Woldia College of Teacher Education, Ethiopia (N=972, *M=615*and *F=357*) in 2016/2017 academic year. From this population, 179 male and 104 female (totally= 283) students were selected as source of information using sampling determination formula of (Yamane, 1967:886, cited in Israel, 2009) i.e., n= $\frac{N}{1+N(e)2}$, where ***n*** is the sample size, ***N*** is the population size, and ***e*** is the level of precision. To do so, stratified random sampling as well as probability proportional to size techniques was used. Their stream (department) and sex were considered as two strata. The following table depicts samples selected in the above mentioned sampling techniques.

Table 1: Summary of the Sample Size by Stream and Sex

Stream(Department)	Population			Sample		
	Male	Female	Total	Male	Female	Total
New Modality	562	262	824	164	76	240
Special Needs	53	16	69	15	5	20
Kindergarten(KG)	0	79	79	0	23	23
Total	615	357	972	179	104	283

Source: WCTE Registrar office

b) Tools of data collection

Perceptual learning styles inventory developed by Dunn and Dunn (1996) was used as data collecting instrument. The instrument is composed of 36 items intended to determine the perceptual strengths related to the visual, auditory, and kinesthetic learning styles practiced by students. The learning styles inventory was modified considering the context of Ethiopian students. For each statement the numerical values 1, 2, 3, 4, and 5 were given *almost never*, *rarely*, *sometimes*, *often*, and *almost always* respectively. In order to minimize language barrier on the part of respondents, in the present study the items in all the questionnaires were originally prepared in English and then translated into Amharic. Forward and backward translation procedures were followed in the translation. And also, the academic year of 2016/2017 first semester average academic achievement scores of participants were taken from the registrar office of the college.

c) Validation and Piloting of the instruments

Before they were administered for data collection the scales were evaluated for ambiguity and content validity by two psychology instructors of Woldia College of Teachers education. Then based on their evaluations the statements in the scales were modified and the final scales were developed and administered to 30selected students. The Cronbach alpha reliability indices for visual learning styles, auditory learning style and tactile/kinesthetic learning style, respectively were .75, .82, .79 which are all satisfactory.

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III. Data Collection Procedures

Before administering the finalized forms of the questionnaires a short orientation was given to two data collectors on how to conduct the questionnaire survey. After they were informed about the purpose of the study and how to complete the questionnaire, respondents agreed to fill the questionnaire. Data were collected in January 2017 and during the administration clarifications were made on any question raised by respondents.

IV. Methods of Data Analysis

Pearson product moment correlation was computed to examine the interrelationship between learning styles preferences and academic achievement. Independent samples t-test was used to examine sex differences in learning styles preferences.

V. Results and Discussion

a) Results

i. *The relationship between perceptual learning styles preferences and academic achievement*

The first objective of this study was to examine the relationship learning styles preferences and academic achievement. Thus, Pearson product moment correlation coefficient was computed to examine the relationships between perceptual learning styles preferences and academic achievement while independent samples t-test was conducted to examine sex differences among perceptual learning styles preferences. The results are presented in Tables 2 and 3 below.

Table 2: Correlation between perceptual learning styles preferences and students' academic achievement

Variables	Mean	SD	Pearson Correlation coefficients			
			1	2	3	4
1. Visual Learning style	3.15	.55	1			
2. Auditory Learning style	3.12	.48	.579*	1		
3. Kinestetic Learning style	2.65	.56	.508*	.514*	1	
4. Academic achievement	2.72	.38	.222*	.428*	.239*	1

**p< .05 (2-tailed)*

As shown in table 2 the relationship between perceptual learning style preferences and academic achievement scores of students is positive and significant at 0.05. Thisalso shows that those students who use auditory learning style preferences (r=.428) are more successful in their academic achievement scores compared with those students who use visual (r=.222) and kinesthetic (r=.239) learning style preferences. Table 2 also has shown that there was significant relationship between visual, auditory and kinesthetic learning style preferences.

Table 3: Independent samples t–test comparing male and female students onperceptual learning styles preferences

Variables	Male (*N*=179)		Female (*N*=104)		T	Df	Sig (2tailed)
	Mean	SD	Mean	SD			
VLS	3.2067	.53358	3.1373	.56443	1.038	282	.300
ALS	3.1238	.46833	3.1049	.48663	0.324	282	.746
KLS	2.7671	.54031	2.6034	.58924	2.392	282	.017

As shown in table 3 the independent t-test analysis revealed that there is statistically significant difference between male and female students mean scores in kinesthetic learning style. In other words, male students mean score(M=2.7671, p<0.05) is significantly higher than female students did (M=2.6034, p<0.05) in using kinesthetic learning style. This result implies that male students are better in daily practicing of kinesthetic learning style than female students. However, there is no statistically significant difference between male and female students mean scores in visual and audio learning styles.

VI. Discussion

This study investigated the relationship between students' perceptual learning style preferences and their academic achievements at Woldia College of teachers' education, Ethiopia. In the current study, there was positive and significant relationship between perceptual (visual, auditory and kinesthetic) learning style preferences and academic achievement scores of students. And also there was significant positive relationships among the perceptual learning style preferences (visual, auditory and kinesthetic) revealing that respondents used perceptual learning preferences interdependently in their learning tasks. It is therefore, helpful to encourage students to identify and understand their perceptual learning styles. Adjustments can then be made to accommodate the students' varied needs. In line with this study, a study conducted by Alkhasawneh et al (2008) found that students with

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multimodal sensory preferences performed better in a nursing course.

There are few studies that compared students' learning preferences with academic achievement using the VARK inventory. In contrast to this study, their finding reported no relationship between learning style preference and academic achievement For instance, a study conducted in India by Urval R.P.*etal* (2014) among undergraduate medical students found no statistical association between learning style preferences and academic performance based on grades. Similar results in another two studies (Dobson J (2009), Dobson J (2010) concerning students in physiology classes also found no association between learning styles, and course scores.

Perceptual learning style is the manner in which a learner perceives, interacts with, and responds to the learning environment. This process of acquiring information involves the elements of perceptual modalities such as visual, auditory and kinesthetic. Keef (1987) stated that the perceptual modality lies with the cognitive domain of learning styles and that perceptual response is both cognitive and affective in the sense that preferred response is a biased initial reaction to information. They involve educating methods, particular to an individual that are presumed to allow that individual to learn best. Most people prefer an identifiable method of interacting with, taking in, and processing stimuli or information.

The process of acquiring information through perceptual modalities (visual, audio and kinesthetic) is more likely different across sex (Rao, 2001). This research finding also supported that male students are significantly better than female students in use of kinesthetic learning style.

If we compare this result with other studies, there are consistent results regarding the relationship between learning styles and gender. Dobson (2009) demonstrated significant differences between learning styles and gender among students in physiological classes. Choudhary et al (2011) also found the same results among first-year medical students. Contrary to this study, Alkhasawneh et al (2008) did not find any differences between gender and learning styles, nor did in another study Dobson (2010).

However, difficult it is to accommodate the gender diversity of learning preferences of students' teachers can minimize the gap through inclusive classroom instruction.

VII. Conclusion and Recommendation

From the findings of the present study, one may possibly conclude the following. There was positive and significant relationship between perceptual (visual, auditory and kinesthetic) learning style preferences and academic achievement scores of students. Males students have shown significantly higher mean scores than female students in using kinesthetic learning style preferences. Teachers are expected to use variety of teaching methodology that can accommodate individual differences in the learning process. School counselors are expected to arrange individual and group counseling sessions, orientation and short term training program to raise students' awareness on perceptual learning style preferences for better academic achievement. Large scale studies are also recommended to further investigate on the influences of learning styles on the teaching-learning process.

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