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**Investigating the Learning Styles Preferences of First-year B.Ed. Students Studying in a  
Public Sector University of Northern Sindh, Pakistan**

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**Abstract**

*In a student-centered teaching and learning environment, students' needs, potentials, and learning styles are considered crucial. Therefore, teachers need to understand what learning styles students prefer to teach effectively. In the current study, a quantitative research approach has been adopted in this study within it descriptive research designed was used. To determine the preferred learning styles of B.Ed. students, VARK (Visual, Aural, Read/Write, and Kinesthetic) learning style model has been used. Since the data was collected using the VARK questionnaire, simple random sampling techniques were used. The reliability of the instrument was calculated through Cronbach  $\alpha = 0.75$ . The sample of the study consists of 140 Bachelor of Education (B.Ed.) students of a Public Sector University located in Northern Sindh, Pakistan. The data were analyzed through descriptive statistics (percentages mean and standard deviation) to determine the most preferred style of learning of students. The results of the study revealed that 27.93% of the B.Ed. students have preferred aural learning style, 25.13% kinaesthetic learning style, 22.65% visual style of learning and 21.09% preferred read/write learning style respectively. To conclude that the majority of the B.Ed. students preferred aural learning style and the least preferred style of learning was read/write. Hence, B.Ed. students were driven towards an aural learning style. This study suggests that students learning styles are influenced by the teacher's teaching style. Therefore, the teacher can determine his/her teaching style by using the score of the VARK questionnaire. The study recommends that another study can be conducted by the teachers to learn about the larger number of students' preferred learning styles. The teacher can also address a mixture of learning styles. In the classroom, there are always diverse learners. In that case, the teacher can use integrated teaching style which can address all learners preferred teaching style.*

**Keywords:** Students learning Style, VARK Model, Public Sector Universities, B.Ed. Students, Pakistan

**Introduction**

Teacher preparation plays a very significant role in the development of society. More specifically, tutoring in a four-year bachelor of education (B.Ed.) degree program students is quite challenging for teacher educators because of the students who enroll in B.Ed. program come from different areas bringing diversity in terms of socioeconomic background, age, educational experiences, competency level, and preferred learning strategies in a university classroom (Ping, Schellings & Beijaard, 2018; Prithishkumar & Michael, 2014). The case is no different in Pakistan. Therefore, the teacher needs to understand his/her learner while teaching. Understanding students has become important for teachers to get desired learning outcomes. Teacher educators want to change students' knowledge, skills, and attitudes to make them effective teachers. There has been a lot of work done on knowing the learning style preferences of students using many learning style inventories (Balasubramaniam, & Indhu, 2016). Learning inventories are defined as models to recognize the learners' preferred learning style. One of the models is the VARK Learning style model. It was introduced in 1992 by Neil Fleming. The recent literature has used the VARK model to know the learning styles of students in medical education and business (Husmann, & O'Loughlin, 2019; Espinoza-Poves, Miranda-Vílchez, & Chafloque-Céspedes, 2019). However, the number of research studies in the education field is very small, and especially in teacher education, less work is done to investigate the learning preferences of

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student-teachers who are pursuing a B.Ed. degree program. It is a degree program in which students are trained, mentored, and equipped with content and pedagogical skills to lead the education sector and become efficient teachers (Rizvi, & Khamis, 2020).

The VARK stands for Visual, Aural, Read/Write, and Kinesthetic preference styles. Fleming (2001) has classified learning styles into four learning modes (Mirza, & Khurshid, 2020). Every mode is associated with preferred senses used in the process of gathering information. The learning modes are visual (v), aural (A), read/write (R), and kinesthetic (K). First of all, a model has to be validated for usage in different contexts and significant results. The VARK model was validated by Dr Walter Leite. He worked at the Research and Evaluation Methodology program at the University of Florida.

According to Fleming (2001), visual learners (V) learn by seeing pictures, graphs, and videos. They are good at understanding flowcharts, figures, tables, and different shapes. The aural learners (A) focus on words. They prefer to listen to teachers rather than writing the text down. Moreover, they listen to audio recorded notes to learn. Aural learners are good at discussions and they like to talk. In contrast, the learners who are good at reading/writing (R) like to read and get information. They rely on printed texts, lecture notes, and books. Also, they are note-takers. The fourth mode is for kinesthetic learners (K). Kinesthetic learners like to have hands-on experience and implement knowledge. They love to interact with the material and environment. Willingham (2005) States that Kinesthetic learners are passive in the classroom. Therefore, all these learners with different learning styles prefer different learning approaches. These learning styles can be measured by the VARK questionnaire. The data from this questionnaire can help teachers modify their teaching practices according to students' preferred styles for better results. The present study aims to determine the learning style preferences of the first-year Bachelor of Education (B.Ed.) students studying at a Public sector University located in Sindh, Pakistan.

### **Statement of the Problem**

The teaching and learning process goes on in educational institutions. Teachers and students are the important indispensable parts of the teaching and learning process. It is the teacher who understands the needs and weaknesses of students'. The students come from diverse backgrounds and have a variety of learning styles. Hence, a teacher must understand students' learning styles (Fleming & Baume, 2006). Knowing the students' learning styles allow teachers to plan and use effective teaching strategies in the classroom (Lohri-Posey, 2003). Other than that, if students learn according to their learning styles, they tend to remember the knowledge longer than usual. However, it has been seen that B.Ed. students are not getting the teachers. This has created a gap between teachers' teaching and students' learning styles in the context of B.Ed. students in an academic setting. Future teachers who graduate from the department of education and teach in various areas can have poor teaching styles because the research suggests that the teachers' teaching styles have a significant impact on student teachers teaching. In such a situation, the teacher educators have a serious challenge of imparting pedagogical skills to student-teachers. Various factors need to be considered while preparing future teachers including analytical, problem solving, motivational factors and pedagogical practice, and students learning styles. Therefore, a teacher needs to know the preferred learning styles of students. The VARK questionnaire has been used by teachers to know their learners learning styles in different countries of the world through the VARK questionnaire. However, the use of VARK in education is very small. The majority of the studies have been conducted in the medical field (Husmann & O'Loughlin, 2019; Espinoza-Proves., Miranda-Vílchez, & Chafloque-Céspedes, 2019). Unlike other countries in Pakistan, this questionnaire has not been used anywhere to understand the learning styles of students at the university level specifically in the teacher preparation program. Tanner and Allen (2004) suggested that teachers should know their students to be effective in the teaching and learning process. If the teacher doesn't understand his/her students, a gap is created in the class. Therefore, the gap can be filled, addressed, and solved if teachers, policymakers, and curriculum makers identify the preferred learning styles of students to improve teaching strategies of teachers to teach students effectively. This study is an attempt to understand the B.Ed student's preferred learning style and to identify which learning style has been used by most of the students studying in the B.Ed. program in a public sector university.

### **Objectives of the Study**

To define the preferred learning styles of first-year B. Ed students following are the objectives that are to be followed in this study. The objectives of the present study are in the text as follows:

1. To determine the preferred learning styles of first-year B.Ed. students studying in the Bachelor of education program in a public sector University located in Sindh, Pakistan
2. To identify that which is the most preferred learning style of first-year B.Ed. students studying at a university located in Sindh, Pakistan.

### **Research Questions**

To achieve the objectives of the study, the following research questions have been formulated to address the problem.

1. What are the preferred learning styles of the first-year B.Ed? Students Studying in Bachelor of Education degree program?
2. Which is the most preferred learning style of B.Ed. Students Studying in B.Ed program?

### **Literature Review**

The section of the literature review starts with the concept of learning styles and how the concept of learning styles got so much popularity and prevalence. It continues with the importance of understanding learning styles and ends with the description of the questionnaire VARK (i.e., Visual, Aural, Read/Write, and Kinaesthetic) which is used in this study.

### **Learning Styles**

Learning styles are defined as the preferences of individuals in terms of learning. They choose the method to study which is most effective for them. In the education field, learning styles have got so much importance (Ganesh & Ratnakar, 2014). They are possessed by every individual from kindergarten to graduate students. Many researchers have worked on learning styles and have written books and tests to facilitate students and teachers. Research studies believe that every individual learns in a different way (Dunn et al., 2009). They have different ways to process information. In past, the learning style concept was ignored but now it has gained an influence in the literature. At present, the concept of learning styles has taken the attention of educators, parents, and society. This concept has been promoted by vendors who offer tests and online technologies to help teachers identify the learning styles of students. Once they identify then they adopt the teaching styles according to the students' learning styles (Marković & Jovanović, 2012).

### **The popularity and prevalence of learning styles**

In 1892, learning styles got prevalent in the research and education field. The concept learning style was used by Thelen (Tanner & Allen, 2004). The concept of learning style was created on the Kolb theory. Kolb assumed that learning is a circular process. In this process, learning is viewed as cognitive experience, concrete experience, reflection, abstract concept, observation, and active experimentation (Saga, Qamar, & Trali, 2015; Kelly, 1997). This theory was used by Honey and Mumford. They developed a psychological framework in which they discussed four learning styles. The learning styles were: (i) activist, (ii) reflector, (iii) Theorist, and (iv) pragmatist.

Moreover, Fat (2000) believes that an individual's preferred learning styles can be changed in different situations. To assess the learning styles, a learning style inventory was developed. By the time, the concept 'learning styles' became popular because it was successful in fostering the teaching and learning process. This concept has contributed to the education field by fostering learning. Many research studies have been conducted in the past to know what type of learning individuals prefer. There have been many questionnaires to assess students learning approaches or learning styles. These questionnaires include SPQ, R-SPQ-2F, and VARK. The learning style reflects what the individuals' preferences are. Therefore, individuals can be treated by teachers as unique individuals with the help of these questionnaires.

### **Importance of understanding learning styles**

Determining the learning styles of learners is very important for the teaching and learning process. Teachers can plan different learning strategies to teach students for their better performance (Brookfield, 2017). It has been observed in the institutes that students do not do well in their studies. One of the reasons is students are not able to cope up with the learning situation (Aldosari, Aljabaa, Al-Sehaibany, & Albarakati, 2018; Saga, Qamar, & Trali, 2015). As result, it becomes challenging for the teachers to get students to teach (Wilson, 2018). By addressing students' specific learning styles, teachers can solve students' problems and prepare students for real-life skills. Further, it has been argued that students do not learn if the teaching style does not match with the students' learning style (Hamza, Inam-Ul-Haq, Nadir, & Mehmood, 2018). Therefore, with a suitable teaching style, teachers can get students engaged in the learning process. Besides, it will increase student's achievement and

satisfaction (Lu, 2017). Similarly, Singh (2017) shared that designing teaching methods that are appropriate for the wide range of learning styles should be the priority of all educationists. In the classroom, the teacher can integrate different learning styles which will increase the benefits for every student (Al-Azawei, Parslow, & Lundqvist, 2017).

**VARK Questionnaire**

The VARK questionnaire was developed by Neil Fleming in 1992. The acronym VARK stands for Visual, Aural, Read/Write, and Kinaesthetic. These four are used by individuals for learning purposes. Four learning styles have been identified by Fleming and Mills (1992). These learning styles are in the text as follows.

1. Visual

This learning style includes the preference of maps, charts, diagrams, flowcharts, diagrams, circles, arrows, and whatever the things teachers use to represent words. The Visual style does not include the use of movies, PowerPoint, and videos (N. Fleming & Baume, 2006). It includes pictures, patterns, shapes, and formats that are used to represent any type of information.

2. Aural

The aural learning preference focuses on the heard or spoken. Students from aural learning styles learn most of the things by listening to lectures, audio-tapes, discussions, debates, social networks, and tutorials. The individuals with this style talk first and then solve the problems instead of first thinking through and then solving the problem.

3. Read/Write

Individuals who prefer this style are more likely to learn from PowerPoint presentations, the internet, dictionaries, words, quotations, and any things which have text. They are good at all forms of reading and writing (N. Fleming & Baume, 2006).

4. Kinaesthetic

Kinaesthetic refers to experiencing or practicing the things which are learned or to-be-learned. The individuals who prefer this style tend to prefer real situations more than others. They learn from concrete experiences. This learning style includes simulations, videos, movies, case studies, practice, and applications (N. Fleming & Baume, 2006).

Fleming and Mills (1992) noted that there are some mixtures too. Only one learning style doesn't need to be adopted by one person. Multiple learning styles can be adopted by the individual for learning. That is the reason the VARK questionnaire provides four scores. This questionnaire has sixteen questions/statements which are learning situations. The four options are related to the learning styles. Each option is related to one learning style (see table .1 for example)

Table.1. VARK Questionnaire example

Statement	Visual	Auditory	Read/Write	Kinesthetic
You have to make an important speech at a conference or special occasion. You would:	make diagrams or get graphs to help explain things.	write a few key words and practice saying your speech over and over.	write out your speech and learn from reading it over several times.	gather many examples and stories to make the talk real and practical.

Following table.2 present a detailed understanding of the statements and the options designed in the VARK questionnaire.

Table. 2 Details of VARK Questionnaire

Question	a category	b category	c category	d category
1	K	A	R	V
2	V	A	R	K
3	K	V	R	A
4	K	A	V	R
5	A	V	K	R
6	K	R	V	A
7	K	A	V	R
8	R	K	A	V
9	R	A	K	V
10	K	V	R	A
11	V	R	A	K
12	A	R	V	K
13	K	A	R	V
14	K	R	A	V
15	K	A	R	V
16	V	A	R	K

In the above table V stands for Visual, A for Aural, R for Read/Write, and K for Kinesthetic. Every option relates to the learning style. In summary, the VARK questionnaire can be used to assess students learning styles (i.e., visual-aural, read/write, and kinesthetic). Though individuals prefer one learning style, it is not necessary. Few individuals also prefer mixtures of learning styles (i.e., visual learners also prefer auditory, etc.). The Questionnaire can be used by the educationists to improve the education system.

**Material and Methods**

**Research Design**

The present study adopts quantitative methodology within it the descriptive research design has opted in the study. The descriptive study refers to a study that describes the phenomenon and examines the characteristics of a sample to generalize to a single population (Roni, Merga & Morris, 2020).

**Population and Sample of the study**

The population of the study was Bachelor of education students studying in the Department of Education of a Public Sector University. The sample of the present study consists of students (n=140) studying in their first year of B.Ed. in a Public sector University of Sindh, Pakistan. The simple random sampling technique was used to collect data for this study.

**Research Instrument**

The data has been collected through an adopted questionnaire namely VARK (Visual, Aural, Read/Write, and Kinaesthetic) for measuring the learning preferences of students. It is a questionnaire that is used to assess students learning styles. It is used to measure four learning styles. The learning styles assessed by VARK include; Visual learning style, aural learning style, Read/Write style, and kinaesthetic learning style. There were sixteen statements on the questionnaire. The reliability of the instrument was calculated through Cronbach  $\alpha= 0.75$ . In recent years, this questionnaire has gained popularity and has been used by educationists to increase students’ learning.

**Data Collection**

The data was collected physically. Bachelor of Education (B.Ed.) students had been given the questionnaire to fill the VARK questionnaire. The guidelines were provided in the questionnaire and further, the researcher has instructed filling the questionnaire. Moreover, the confidentiality and anonymity of their responses were also ensured during the process of data collection. During data collection, the participants of the present study were informed about the purpose of the study. Moreover, they were also conveyed that their data is being used only for the research study purpose.

**Data Analysis Procedure**

The data of the present study was analyzed through SPSS software version 22. The descriptive statistics (mean and standard deviation) were calculated to identify the preferred learning styles of the first year B.Ed. students.

**Results and Findings of the Study**

The data of the present study was analyzed through the Statistical Package for Social Sciences (SPSS version. 22). Descriptive statistics were found in the analysis. It includes the mean and standard deviation.

Table 3: Descriptive Statistics and percentages

Statements	N	V (%)	A (%)	R (%)	K (%)	Mean	S.D
1. You are helping someone who wants to go to your airport, the center of town or railway station. You would:	140	12.5	60.0	5.0	22.5	2.0750	.883
2. A website has a video showing how to make a special graph. A person is speaking, some lists and words describing what to do and some diagrams. You would learn most from:	140	25.0	27.5	17.5	30.0	2.5250	1.17
3. You are planning a vacation for a group. You want some feedback from them about the plan. You would:	140	30.0	22.5	0.00	47.5	1.9750	1.18
4. You are going to cook something as a special treat. You would:	140	25.0	25.0	32.5	17.1	2.4250	1.05
5. A group of tourists want to learn about the parks or wildlife reserves in your area. You would:	140	22.5	27.5	35.0	15.0	2.4250	1.00
6. You are about to purchase a digital camera or mobile phone. Other than price, what would most influence your decision?	140	30.0	45.0	12.5	12.5	2.0750	.97
7. Remember a time when you learned how to do something new. Avoid choosing a physical skill, eg. riding a bike. You learned best by:	140	72.5	2.5	17.5	7.5	1.6000	1.03
8. You have a problem with your heart. You would prefer that the doctor:	140	12.5	22.5	30.0	35.0	2.8750	1.04
9. You want to learn a new program/skills/game, you will:	140	0.00	27.5	12.5	15.0	2.3570	1.9
10. Like websites that have:	140	10.0	47.5	25.0	17.5	2.5000	.905
11. Other than price, what would most influence your decision to buy a new non-fiction book?	140	0.00	10.0	42.5	47.5	3.3750	.66
12. You are using a book, CD, or website to learn how to take photos with your new digital camera. You would like to have:	140	22.5	20.0	37.5	20.0	2.5500	1.06
13. Do you prefer a teacher or a presenter who uses:	140	35.0	27.5	2.5	35.0	2.3750	1.2
14. You have finished a competition or test and would like some feedback. You would like to have feedback	140	35.0	7.5	25.0	32.5	2.5500	1.2
15. You are going to choose food at a restaurant or cafe. You would:	140	25.0	45.0	27.5	2.5	2.0750	.79
16. You have to make an important speech at a conference or special occasion. You would:	140	5.0	35.0	15.0	45.0	3.0000	1.01

**Descriptive Statistics**

The descriptive findings of the study (Table 3) revealed that the B.Ed. Students have different preferred learning styles. In the first statement the percentages of the four preferred learning styles of B.Ed. Students are A (60%), K (22.5%), V (12.5%), R (5%), this shows that most of the participants of the study have been adopted an aural learning style. This means that they can make other people understand by communicating orally. Moreover, to conclude that the majority of students preferred the Aural learning style.

The results for the second statement (table 3) revealed that B.Ed. Students response percentage was K (30%), A (27.5%), V (25%), R (17.5%), it can be concluded that most of the participants have preferred the Kinaesthetic learning style, and also a lot of the students have

preferred Aural learning style. This depicts that the participants were more likely to watch the actions to learn and listen to them in this particular situation. Very few people have preferred to read the words (i.e., Read/Write learning style). In addition to that, the mean value and standard deviation were found as (Mean=2.5, S.D=1.17). Hence, B.Ed. Students preferred the most kinaesthetic and aural learning styles respectively.

It has been found that in the third statement (table 3), the participants of the most of students preferred K (47.5%), V (30%), A (22.5%), R (0%), Kinaesthetic and other participants have given priority to visual learning style. It means that participants would like to give feedback either by highlighting their experiences or using the map to show them the places. Very few participants have chosen to phone, text, or email. Thus, the kinaesthetic style was the preferred style of B.Ed. Students. Also, the means value and standard deviation for the statement were calculated as (Mean=1.97, S.D=1.18). Therefore, it has been concluded that the Kinaesthetic learning style was the most preferred.

Moreover, in the fourth statement (table 3) B.Ed. students have preferred R (32.5%), V (25%), A (25%), K (17.5%). The findings show that most of the participants have preferred the read/write style whereas, very few of the students have preferred the kinaesthetic style of learning. Further, the mean value and standard deviation were found as (mean=2.42, SD=1.05). Thus, the most preferred learning style was read/write.

The analysis of the fifth statement (table 3) shows that B.Ed. Students have preferred R (35.5%), a (27.5%), V (22.5%), K (15%) respectively. It has been discovered that most of the participants have adopted the read/write learning style. On the other hand, the least preferred style of learning was kinaesthetic. In addition to this, the mean value and standard deviation of the statement were found to be (mean=2.42, SD=1.00). This means first-year B.Ed. Students have chosen to read/read as the first preference.

The results from the sixth statement (table 3) show that A (45%), V (30%), R (12.5%), K (12.5%) the most preferred learning style in the said situation was aural. A major number of participants believe that they will order or purchase a camera/mobile phone while listening to others. Moreover, the mean value and the standard deviation were found as (Mean=2.07, Standard Deviation=.97). Thus, B.Ed. students preferred the auditory learning style the most and the least preferred style were read/write and kinaesthetic style of learning.

The findings from the seventh statements (table 3) revealed that B.Ed. Students' most preferred learning styles were V (72.5%), A (25%), R (17.5%), K (7.5%) respectively. The findings show liked the visual learning style the most. This way, it suggested that students learn best when they see pictures or graphs and aural learning was the second preferred. In contrast, very fewer participants have preferred the kinaesthetic learning style for this particular learning situation. Moreover, the mean value and standard deviation (Mean=1.6, SD=1.03). Overall, first-year B.Ed. students like to learn visually.

The descriptive statistics (table 3) from the study discloses that K (35%), R (30%), A (22.5%), V (12.5%), and analysis of results shows that most of the students have preferred kinaesthetic learning style. Also, the mean value and standard deviation were found to be as (Mean=2.87, S.D=1.04). Thus, the majority of students preferred the kinaesthetic learning style.

The findings of the statement ninth (table 3) show that A (27.5%), K (15%), R (12.5%), V (0%), most of the students have preferred aural learning style. To learn a program of skill, most of the students thought that they learn new programs by listening to the mean value and standard deviation was also calculated as (mean=2.35, S.D=1.9). It means the highest preferred learning style was aural and the second preferred style was kinaesthetic learning style.

The analysis of the tenth statement (table 3) discovered that there were A (47%), R (25%), K (17.5%), V (10%) a large number of the participants prefer aural learning style for this particular situation. Students prefer the things which are clearer to them orally. Furthermore, the mean value and standard deviation were (mean=2.50, S.D=.905), which depicts that aural was the first preferred learning style of first-year B.Ed. students. On the other hand, visuals were the least preferred style of learning.

The findings from the statement eleventh (table 3) show that K (47.5%), R (42.5%), A (10%), V (0%), most of the participants prefer Kinaesthetic learning style. They like to have real-life stories, experiences, and examples. Besides, the mean value and standard deviation were found as

(Mean=3.37, S.D=.66).To sum up, B.Ed. students have preferred Kinaesthetic learning style and the second preferred style was read/write.

The findings (table 3) revealed that R (37.5%), V (22.5%), A (20%), K (20%) in a twelfth statement the majority of the students have preferred read/write learning style. Moreover, others equate or write things to learn. The mean value and standard (mean=2.55, S.D=1.06) depicts that the number of participants who have preferred read/write learning style and aural learning style.

In the thirteenth mentioned learning situation (table 3), K (35%), V (35%), A (27.5%), R (2.5%), an equal number of participants have preferred Kinaesthetic learning style and Visual learning style. However, very few participants have preferred Read/Write learning style. The mean value and standard deviation (mean=2.37, S.D=1.2). Thus, the majority of the B.Ed. Students preferred the kinaesthetic learning style.

It has been revealed in the findings of the fourteenth statement (table 3) that V (35%), K (32.5%), R (25%), a (7.5%), were the preferred learning styles of the B.Ed. students from the most to least respectively. The mean value and standard deviation (mean=2.55, S.D=1.2), show that most of the participants have preferred visual learning style. It means that they would like to use examples of what they have seen.

The results from the fifteenth statement (table 3) show that A (45%), R (27.5%), V (25%), K (2.5%), mostly the learning style preferred by the students is Aural learning style. In the said situation, they would like to listen to the waiter or ask their friends for recommendations, and kinaesthetic learning style being the least preferred. Further, the mean value and standard deviation (mean=2.07, S.D=.79) depicts that aural learning style was the most preferred learning style among First-year B.Ed. Students.

Finally, in the sixteenth statement (table 3) the findings were K (45%), A (35%), R (15%), V (5%) respectively. This shows that most of the participants preferred the Kinaesthetic learning style. They would like to get many examples and stories to make the talk practical and appropriate. Moreover, the mean and standard deviation were found as (mean=3.00. S.D=1.01). Overall, students preferred the kinaesthetic learning style.

Table 4. Overall results of preferred learning style of B.Ed. Students

Statements no.	Mean	Learning style
1	1.4	Aural
2	2.07	Kinaesthetic
3	2.52	Kinaesthetic
4	1.97	Read/Write
5	2.42	Read/Write
6	2.42	Aural
7	2.07	Visual
8	1.60	Kinaesthetic
9	2.87	Aural
10	2.50	Aural
11	3.37	Kinaesthetic
12	2.55	Read/Write
13	2.37	Kinaesthetic
14	2.55	Visual
15	2.07	Aural
16	3.00	Kinaesthetic

The VARK questionnaire consisted of a total of 16 learning situations (i.e., statement). Each statement has four options. Each option relates to one learning style. For instance, a= visual, b= aural, c=kinaesthetic, and d= read/write. The overall results show that the most preferred learning style of first-year B.Ed. students are Aural. The mean and percentages of the aural learning styles tell us that the aural is preferred by most of the students. The students learn from the speeches and lectures. They like to listen and record audiotapes and use them for learning purposes. On the other hand, the Visual learning style is the least preferred.

**Table 5 Overall Findings from the most to the least Preferred Learning style of B.Ed. Students**

Learning Styles	Total percentage	Total mean	Preferred learning style
Aural	27.93%	2.25	First
Kinaesthetic	25.13%	2.48	Second
Visual	22.65%	2.31	Third
Read/Write	21.09%	2.31	Fourth

The findings from (table 5) revealed that 27.93% of the B.Ed. students have preferred aural learning style, 25.13% kinesthetic learning style, 22.65% visual style of learning and 21.09% preferred read/write learning style respectively. To conclude that the majority of the B.Ed. students preferred aural learning style and the least preferred style of learning was read/write.

**Discussion**

The present study was conducted to understand the preferred learning styles of First-Year B.Ed. students. The VARK questionnaire was used to determine learning styles. The VARK questionnaire is a popular tool and has been used by various researchers to study the learning styles of individuals. Students are more likely to learn from getting engaged in the situation rather than reading, or listening about it (Vaishnav & Chirayu, 2013).

The current study has found that B.Ed. Students first preferred learning style was aural, second was Kinaesthetic learning style, third was visual, and fourth was read/write. Thus, the findings of the study suggested that students preferred the aural learning style the most and read/ write learning style was the least preferred learning style among First-year B.Ed. students.

The results of the current study showed that students have more than one preferred learning style because the findings revealed that students use different styles while learnings concepts. This suggests that a teacher must use a variety of instructional strategies in the classroom. This study correlates with the studies conducted by Balasubramaniam and Indhu, (2016), Husmann and O'Loughlin (2019), Espinoza-Poves, Miranda-Vílchez, and Chafloque-Céspedes (2019) in medical education where the majority of students have preferred multimodality of learning styles. However, the aural learning style was the most preferred.

Since B.Ed. Students have preferred multi- preferences for learning, they can be taught through modern methodologies of teaching and learning (Moazeni, & Pourmohammadi, 2013). This study found that the second most preferred style of the students was kinaesthetic learning style and visual being the third preferred and the least preferred learning style was read/write.

However, the findings of the current study do not correlate with any study conducted in the context of Pakistan because of scarce research studies on the learning style of students using the VARK questionnaire. So, this study may be the first kind of study which has been conducted in the context of teacher preparation degree programs. In this regard, the current study has greater implications for future research studies to be conducted in Pakistan or internationally.

It has been suggested that learning styles inform teaching instructions (Dunn et al., 2009). Therefore, the teacher can determine his/her teaching style by using the score of the VARK questionnaire. Though the present study had a small sample, this study can be conducted by the teachers to learn about the larger number of students' preferred learning styles. The teacher can also address a mixture of learning styles. In the classroom, there are always diverse learners. In that case, the teacher can use an integrated teaching style that can address all four learning styles (i.e., visual, aural, read/write, kinaesthetic). This study has implications at the classroom level if it is conducted on larger populations. The policymakers, stakeholders, and educators can also understand the learning styles and treat the students accordingly.

**Conclusion**

Knowing the learning styles of the students, exposing the students to collect pieces of evidence, and exploring their learning preferences help students achieve their desired academic goals. It is suggested that to help students, teachers must find the learning style of students so that the students can attain a higher level of learning. By keeping the students learning styles in mind, a teacher can use innovative strategies and use a variety of instructional aides to stimulate students learning and make the classroom more interactive. Conclusively, this study can be used at different institutes to get better results for students and to determine teachers' teaching styles. This study can lessen the gap which is created among students and teachers because of different learning and teaching styles. Hence, this study concludes that it is very important for the teachers to know the learning style of students so that they can better plan for teaching the students which can learn in multiple ways.

### **Implications of the study**

The present study aims to contribute to the education system for the better learning of students and a better understanding of the teachers. This study contributes to the field by highlighting the importance of learning styles in the education field specifically in the domain of teacher preparation programs. Furthermore, this study may be the first kind of study that has been conducted in the context of a Bachelor of education four years degree programs in a public sector university located in Sindh, Pakistan. The teachers may also use the questionnaire to learn their students' learning styles at all levels of education. This study has also laid the foundation for future research studies in Pakistan as well as internationally.

### **Limitations and Delimitations**

The study consists of (n=140) B.Ed. Students which have been selected randomly from one Public Sector University. The study was limited to the only Sukkur region of Sindh, Pakistan. The data was collected from the Education Department of a Public Sector University. Therefore, the results of the current study cannot be generalized to a wider population. Moreover, the data could have been collected from the larger population but the university students were busy in preparation for exams and the response rate was low. This study opens new avenues for future researchers to conduct a study on the same topic by using a large sample size and collect data from more than one university.

### **Future Research Directions**

Though the sample of the present study consists of a small sample, the same study can be conducted to measure students learning approaches of diverse departments. The results of the VARK questionnaire can bring a significant improvement in the teaching and learning process. The questionnaire can be used by teachers to know the learning styles of students to reduce the gap between the teachings and learning at all levels (i.e., school level, college level, and university level). Future researchers may compare the preferred learning styles of male and female students using the same questionnaire. The findings of such research studies on the learning styles can be used to plan teaching methods and content that are matched more with the learning styles of the students. The VARK questionnaire is not limited to teachers. It can be used by different stakeholders to understand the learning styles of the studies and plan accordingly to facilitate them more.

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