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Published in:
Webology

Published: 01.01.2022

Document Version
Publisher's PDF, also known as Version of record

Exploration Of Teacher Educators' Intelligence Through The Inventory Of Multiple Intelligences Theory: An Attempt To Identify The Teaching Style For Better Learning Support

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Abstract

Does teacher training provide suitable skills to provide the best education to students with different intelligence profiles? How do teachers perceive the role of multiple intelligences? These were two questions that this research tackled. The teacher educators in a Pakistani university were interviewed and the interview data were analyzed by using the thematic analysis technique. The analysis showed that TEs connected teachers' teaching styles with how they perceived multiple intelligences. The findings of this study would be an addition to the existing literature on educational sciences by exploring, the most dominant and least dominant intelligence and teaching style of teacher educators according to their intelligence at the local, regional and global levels.

Keywords: Teaching Style, Teacher Educators, Multiple Intelligence Theory

Introduction:

In his theory of multiple intelligences (MI), Howard Gardner (1983) described how people obtain, process and remember knowledge in eight different ways. Moreover, it pointed out that each human being has a unique set of eight IQs. Similar to the idea of Gardner, Octaberlina and Asrifan, (2021) highlighted that intelligence is a common intellectual ability to acquire knowledge, solve problems with products and make connections in real lives. Gardner (1983) extensively defined these eight intelligences in his book Firms of Mind and elaborated on how each individual is different from others in terms of their intelligences. These intelligences are logical-mathematical, verbal-linguistic, musical, bodily-kinesthetic, interpersonal, naturalistic, visual-spatial and, intrapersonal. In this article, we explore how teacher educators (TE) describe the input of the MI theory in teacher training in Pakistan.

MI is widely analyzed as a tool for designing education and even considered the most influential theory for education (e.g., Shore, 2004). It has also been used for developing teacher training. For example, a study by Green and Tanner (2005) suggested that although teaching and training using MI theory as a

framework necessitates creative thinking, it can ignite motivation and make learning satisfactory, especially in online teaching and learning environments (see also Mettetal, Jordan, & Harper, 1997).

According to Global Innovative Index 2018, Pakistan declared 109 out of 126 countries that provide the least quality education to their nation (Khan, 2018). Pakistan is taking major steps to provide quality education. But a number of factors are creating hindrances such as poverty, limited resources, least qualified teachers and political influence are some of the major factors. The lack of trained, least qualified and less experienced teachers has historically influenced the quality of education in Pakistan. (Hunzai, 2009). Similarly, it is highlighted by many researches that competent and qualified teachers play a vital role in the quality of education.

Unfortunately, Pakistani education cannot meet the individual needs of the students because teachers use traditional teaching methods for all students. In Pakistan, most teachers do not know about their own teaching styles, they just follow one particular teaching style which is common in their institutes (Arshad & Zamir, 2018). As a result, most of the backward areas in Pakistan are left behind in the progression of the professional development and growth of their students. In order to address this issue, the research aims to investigate the most dominant and least dominant intelligence in the teaching style of teachers in Sindh Pakistan. Moreover, this research study is based on the presupposition that the equipped teachers having knowledge about their most and least dominant intelligence and teaching style, can play a vital and prominent role to maintain Quality Education at their concerned institutes.

Theory of Multiple Intelligence:

Here, we describe the essence of the theory of multiple intelligences and studies related to its intelligence components to provide a better understanding of its uses. Logical mathematics refers to the ability of an individual to perform mathematical operations, think critically, and logically, perform mathematical operations, identify and classify things and reach conclusions (Mehiri, 2020). However, verbal-linguistic intelligence is the ability and capability of the person to remember and understand knowledge by using words (Hasanudin & Fitrianingsih, 2020). Likewise, Musical intelligence has been defined by Octaberlina and Asrifan, (2021) as the capacity of the people to identify rhythmic tones of sounds, voice, and melody and it expresses feelings through composing, playing, and singing. The bodily-kinesthetic intelligence is all about a person's ability to use the body meaningfully to express ideas and thoughts to reach a conclusion (Yuliyanto et al., 2020). Similarly, interpersonal intelligence is one of the eight intelligences, people having this kind of intelligence are good at building social bonds, working in teams and remembering and understanding knowledge by interacting with others (Dien & Wustqa, 2018). Similarly, naturalistic intelligence refers to the ability of the person to classify, comprehend, and understand the knowledge encountered in the natural world (Mehiri, 2020). In addition to this, visual/ spatial intelligence is the ability of the individuals to visualize the things and objects in their minds and solve the problem or reach a conclusion by visualization (Safranj & Zivlak, 2018). Intrapersonal intelligence is the ability to learn knowledge, find insight and think about self-reliance (Octaberlina & Asrifan, 2021). According to Hayward Gardner, every individual possesses one intelligence of these eight intelligences but some people show less, hence it is a bit difficult to find the intelligence of a person quickly and accurately. Therefore, identifying the intelligence of teachers and students has become one of the prevailing trends and researchers and educationists are working on it. Muqodas, et al., (2020), highlight the importance of multiple intelligence

in education. Knowing the intelligence of a student-teacher can enhance a student's cognitive and social skills which help them to acquire knowledge quickly and properly. Likewise, (Bowker, 2020) also posited that teaching students according to their intelligences so students can relate themselves to their education help them to think critically and logically while developing any skill or acquiring new knowledge. MI theory recognizes students that they are part of their education by assessing them in different ways (Sanchaz et al., 2017). This could be possible when the teacher has enough knowledge about MI theory.

The American guiding ideology of education reforms paid exclusive attention to the multiple intelligence of teachers (Liu, 2017). When these reforms come, researchers and educationists integrate MI theory with the teaching styles of teachers and develop a list of teaching strategies for each type of intelligence to meet individual needs and demands in class and also achieve learning outcomes while teaching different subjects (Dolati & Taahriri, 2017). Similarly, another study also explored that MI-based pedagogy positively influences a student's motivation, confidence and life skills (Madkour & Mohammad, 2016). Moreover, 21st-century teaching emphasizes diversity and considers that each individual has their own uniqueness and identity. Therefore, educationists and researchers explored that by integrating MI base pedagogy teachers can meet the individual needs, learning styles and interests of the students (Zhou, 2020). Since 21st-century education requires the holistic development of children, MI base educational strategies have been designed to develop students' various skills and remove their weaknesses (Sofyan & Kasmini, 2019). However, Dolati et al., (2017) highlighted the issue that in most countries teachers pay less attention to their intelligence even though most teachers don't know about their intelligence and teaching style according to their intelligence. Moreover, Jett and Cross, (2016) also found that teachers adopt or use teaching styles according to their comfort, experience or which is frequently used in their institutes. Dolati et al., (2017) posited that teachers must have an idea about their dominant intelligence and related pedagogies. Utomo, (2018) highlighted that teachers must keep their dominant teaching style and intelligence aside in the classroom to avoid bias towards specific intelligence. So teachers should keep aside their dominant teaching style and preferences and change or adopt any strategy according to the situation, need and demand of the learners. This can happen when teachers know about their dominant teaching style and intelligence. Hence, this study aimed to identify the teaching style for better learning support.

Interpersonal Intelligence:

The first intelligence defined by Howard Garder is interpersonal intelligence; it is the ability to understand and respond to the nonverbal, speech and gestures of others (Octaberlina & Asrifan, 2021). Similarly, Dien & Wustqa (2018) define that people with such intelligence acquire information well and quickly, understand and respond to it, and establish social bonds or collaborations with others in a limited amount of time. In addition to this, it requires that we observe and understand people's intentions, motives, emotions, and personalities, give suitable opinions to others and also understand the social situation of others and how they are actually feeling (Ann & Logsdon, 2020). Similar to this, Umani, (2020) highlighted some characteristics of interpersonal people, they love to communicate with others, try to solve others' problems and make strong relationships in their professional life. They can easily be involved in any institutional projects within institutes or out of the institute (Chang & Brickman, 2018). Moreover, such people learn by interacting with the environment and colleagues (Garrett, 2020), they can easily bond with their surroundings and they enjoy the learning process through that (Gardner, 2017). In addition to this, interpersonal people enjoy the involvement within a large group of people, they get motivated when more

people are around them (Nopiya, Hindriana & Sulistyono, 2020), such people are very good to find out the cause of the problem in crowded group and also they have the skill to get feedback from the large community of people (Muchlis et al., 2021).

Logical-Mathematical Intelligence:

Logical-mathematical intelligence has been defined as identifying the thing according to its pattern, performing mathematical operations accordingly, solving mathematical related problems, and thinking critically and logically (Octaberlina & Asrifan, 2021). Those people who have this intelligence, can solve mathematical problems very easily and quickly, they are very good at logical reasoning, they are also good at inductive and deductive reasoning, problem-solving, and sensitivity to relationships between objects and model identification (Ann & Logsdon, 2020). In addition to this, people with strong logical-mathematical intelligence imagine abstract thinking and understand logical and numerical patterns (Thambu et al., 2021). They like to learn by analyzing abstract visual information, numbers, patterns, and the cause and effect relationship. (Pehilvan & Durgut, 2017). Arum et al, (2018) highlighted a few main characteristics of those people who have mathematical intelligence; they are very good at abstract concepts and their solutions, they have very good at memorization, their visual analysis is very effective and productive, they want to play with numbers, they see a pattern in every situation and they can solve problems with the help of mathematics analyzation (Thambu et al., 2021). Additionally, they prefer the logical order of instructions and do best in an organized and structured environment. (Azinar & Munzir, 2020).

Verbal linguistic:

Octaberlina and Asrifian (2021) defined Verbal linguistics as the ability of an individual to solve problems, get information and reach a conclusion by using spoken language. Most people perceive, analyze and share their thought and ideas by singing words (Hasanudin & Fitianingish, 2020). Moreover, Lnn and Logsdon, (2020) posited that people having Verbal linguistic intelligence people vomit their ideas via using any language. These kinds of people are more interested to adopt a new language and they quickly retrieve language information (Akyol & Boyaci, 2019). Furthermore, they often excel in standardized tests and respond quickly and accurately to written and spoken information (Armstrong, 2018). In addition to this, those people who are strong at this intelligence prefer more activities based on a talk where they can express themselves in front of others, rather than visual data (Luthfiana, Ambarita & Suwarjo,2018), they usually enjoy language classes, interact with different language people, journalism, debates and speeches etc. (Thambu et al., 2021). –Musical intelligence;

Musical Intelligence:

People called musical intelligence an auditory-rhythmic musical intelligence. People having this intelligence can easily identify voice, tones, sounds and rhythms easily and also express their thought, ideas, feelings and emotions with help of music and singing (Octaberlina & Asrifan, 2021). These people understand and process any information or knowledge with the support of tones, sounds and rhythms (Ambarita & Suwarjo, 2018). They are considered musical talented people who are sensitive to music and perform music appropriately and emotionally (Ann & Logsdon, 2020). The appropriate learning style for them is the auditory learning style, they learn by singing tones, and composing the music and melody

(Mejzner, 2019). Moreover, these people are very comfortable with music and enjoy background music while studying. They also respond quickly to singing and playing musical instruments (Sheoran, Chhikara & Sangwan, 2019). Music also helps them to recall memories and find solutions or reach conclusions (Mejzner, 2019).

Intrapersonal Intelligence:

Intrapersonal is also known as smart worker people. It is an intelligence to learn the information by themselves (Octaberlina & Asrifan, 2021). In addition to this, individuals motivate themselves to teach (Armstrong, 2018). Such people know them very well; they know their emotions, behaviour, skills, and attitudes and they will know how to achieve their aims and objectives (Yerizon, Putra & Subhan, 2018). Such people learn new things with the help of their cognition, they usually do not easily get help from any other person because they want self-study (Sholikhati & Saputro, 2017). Likewise, Mulbar et al, (2019) also highlighted some characteristics of those people who have interpersonal intelligence such as; they prefer to work alone, they do not make groups, they do not want more verbal communication, they are very self-centered and they also know the aim of their life and achieve that goal at any cost even who the community deny them (Octaberlina & Asrifan, 2021). Moreover, such people use more of their feelings to answer the information and make new ideas (Armstrong, 2018).

Naturalistic Intelligence:

Octoberlina & Asrifan, (2021) define Naturalistic intelligence as the capability of an individual who values natural things, natural environment and natural phenomena. Moreover, the following elements are related to Naturalistic intelligence such as integration, reflection, connection, asthmatics, the human and natural world (Ningrum, Soesilo & Herdianshhay, 2018). These people love the things which are created by nature like mountains, plants, animals, natural beauty etc. (Faridy & Rohendi, 2020). There are some characteristics that possess naturalistic intelligence such as beach, mountain, and photography, hacking and, touring (Pardana et al., 2018). Moreover, people feel comfortable when they learn through natural things like outdoor lessons, touring, hacking and exploring the natural environment by themselves (Yunisari et al., 2016).

Bodily-Kinesthetic Intelligence:

Bodily-kinesthetic intelligence is defined by Octaberlina and Asrifan (2021) as the capability of an individual to get knowledge by engaging hands, physical expressions and hands. Hence, people call them physically active people. These people possess characteristics such as touching, and gross and fine motor skills to manipulate any object (Armstrong, 2018; Kocak, 2019). Moreover, these people enhance their memory by involving there as well as in other moments (Any et al., 2018). Mostly these people are talented athletes and feel comfortable performing tasks by hand and they have a lot of energy for this (Sheeran, Chhikara & Sangwan, 2019). These people understand information by using their fine and gross motor skills (Nista & Piccolo, 2020). Additionally, Kocak, (2019) posited that people having strong Bodily-kinesthetic intelligence prefer writing and sometimes writing helps them to recall their knowledge and memory. The comfortable learning style for them is drama, sports, physical games, lab work, experiments and role-playing (Ann & Lagsdon, 2020).

Visual-spatial Intelligence:

Visual-spatial intelligence is considered the capability of an individual to visualize the words effectively and correctly also modify their surroundings according to their insight, perception and experiences and build new experiences (Fatmawati et al., 2021). People having strong Visual-spatial intelligence can easily remember fine details, images and faces, they analyze and visualize objects from different angles (Gani, Safitri & Mahyana, 2017). Moreover, Rimatmojo et al., (2017) highlighted that people who possess Visual-spatial intelligence are good at reasoning and spatial judgement which helps them to judge the distance between objects and themselves. Moreover, these people use their spatial judgement and visual sense to achieve any goal or to complete any task which comprises creativity, design and judgement (Aini et al., 2020). People having strong Visual-spatial intelligence can learn best by watching videos, recognizing patterns, solving visual puzzles, interpreting visual information and with the help of visual media and pictures (Yenilmez & Kakmaci, 2015).

Methodology:

The purpose of this research is to investigate how teacher educators (TE) use their knowledge of multiple intelligences to enhance their teaching. The following research questions were set for this study: (1). How do the TEs perceive the usability of MI theory in teaching? (2). How do the TEs use MI theory to help students' learning? For this study, a qualitative research approach was used to know the perceptions, understanding and experiences of the participants. Qualitative research also helps the researcher to identify any phenomena, the beliefs and behaviours of participants (Hennink, Hutter & Bailey, 2020), and the purpose of this research was to bring out the TE's voices and perceptions.

A semi-structured interview method was applied for data collection. The data has been collected through semi-structured interviews from the sample of TEs who were approached by their head of department and organization in order to get real and true primary data. A semi-structured interview is used to describe that interviewer asks the open-ended questions in an informal manner to get more in-depth data in an easy environment (Newcomer, Hatry & Wholey, 2015). The following themes were designed for the interview to identify the perception and response of the teachers about how they perceive MI theory in their work. These questions are (a) what is your most dominant and least dominant intelligence in the light MI Inventory? (b) What learning and teaching and learning style suits you? (c) How can a learner learn the best / do quick acquisition of knowledge? (d) How MI theory supports teachers to achieve their outcomes? (e) How MI theory supports teachers to learn cognitive skills effectively?

The participants were selected by using the purposive sampling technique. The purposive sampling technique is a powerful technique when the researchers want real authentic and in-depth data (Kozleski, 2017). Moreover, Creswell (2012) suggested that in order to report properly and cover most of the aspects of any phenomenon the number of participants may be ranging from (1) to forty (40). The topic has been discussed and explained with the teacher before taking the interview. The interview provides a great opportunity to listen to the different professional and experienced responses of TEs. The thirteen (13) responses of TEs were found impressive to produce authentic primary data for this study to analyse as explorative and then to produce themes. The responses of TES were kept confidential as per the agreement

done before conducting interviews. The important informative said explorative were recorded, selected and coded, to use for the analysis of the study consist of to explore Teacher Educators' Intelligence type, explored through the implementation of the Inventory of Multiple Intelligence Theory. The inventory of MI theory is supported to identify the suitable learning and then teaching style of teacher educators of province Sindh, Pakistan.

Results:
The total five themes were generated scientifically using all necessary steps of thematic analysis. The identified themes and their details are as follows with the tables supported by data.

Interpersonal as the most dominant with Musical as the least dominant Intelligence:

Interpersonal intelligence was perceived by (23%) TEs as their dominant intelligence. They defined their teaching style by focusing on learners' needs to construct their knowledge through brainstorming techniques and mind maps, which is highly appreciable and achievable through hands-on and collaborative work. Student-centred teaching, cooperative strategies, projects, inquiry-based teaching and learning, scaffolding, meeting the individual needs of students, engagement of the students in planning and assessment to provide them with a conducive environment to stimulate their instincts. Similarly, (23%) of their dominant intelligence was interpersonal perceived learning style as depends upon individual's attitude, aptitude, focusing on Individual differences, individual's own perception, individual previous experiences, capabilities and interests.

The Acquisition of Knowledge occur when the learner involves in a different situation, and environment, acquires chunks of knowledge and applies them in different settings, ICT integration, and individualized attention, works in collaboration and matches with previous knowledge. Similarly, learning outcomes depends upon coherence between, teaching pedagogy, learning style, assessment, using different strategies and activities in class, proper guidance of the teacher and when students feel comfortable. Likewise, enhancement of students' cognitive development depends upon identifying weaknesses and strengths of students, Effective mind Games such as puzzles and card games, interaction with different people and Enhance critical thinking of the students. Lastly, teacher educators perceived Enhancement of teachers' Cognitive Development depends upon the identification of their own strengths and weaknesses, by relating previous knowledge with new knowledge.

Table. 1 Interpersonal as a most dominant Intelligence with Musical

Item(s)	Statement of TEs
Teaching Style	Teaching style depends on the learner's need, based on the constructivist teaching approach (TE – 01).
	Effective teaching style depends on hands-on activities and collaborative work (TE – 12).
	Student-centred teaching style depends on cooperative strategies, inquiry-based teaching and scaffolding to meet the individuals needs of students through students' engagement (TE – 8).

Learning Style	Learning style depends upon an individual's attitude and aptitude focusing on Individual differences (TE – 01).
	Learning style depends upon an individual's own perception, and information related to practical life (TE – 12).
	Learning style depends upon an individual's previous experiences, capabilities and interests (TE – 8).
Acquisition of Knowledge	Acquisition of Knowledge upon ICT integration, individualized attention and work in collaboration (TE-12).
	Acquisition of Knowledge occur in differing environments, Acquire chunks of knowledge and apply them in different settings (TE-8).
	When new knowledge matches with previous knowledge (TE-1).
Achievement of Learning Outcomes	Achievement of learning outcomes depends upon, coherence between teaching pedagogy, learning style and assessment (TE-8).
	By using different strategies and activities in class (TE-1).
	Proper guidance of a teacher, when students feel comfortable (TE-12).
Enhancement of Students' Cognitive Development	Enhancement of Student's Cognitive Development depends to reflect upon themselves and identifying their strength and weaknesses (TE-1).
	Effective mind Games such as puzzles and card games, Interact with different people (TE-12).
	Enhance the critical thinking of the students (TE-8).
Enhancement of teachers' Cognitive Development	Enhancement of teachers' Cognitive Development depends upon analytical thinking, and problem-solving skills (TE-12).
	When people effectively relate previous knowledge with new knowledge (TE-8).
	Reflect upon themselves and identifies their strength and weaknesses (TE-1).

Interpersonal as a most dominant Intelligence with Logical-mathematical as the least dominated:

Interpersonal intelligence was perceived by (31%) TEs as their dominant intelligence with mathematical least dominated, who defined their teaching style as focusing on learner's need, discussion method, interactive teaching approach, field base, field trips, Multimodality, through concrete reach at abstract, integration of different activities, collaborative work Learner-centred approach, empowering students to make their own decisions. Likewise, (31%) TEs define the best learning style depending on the involvement of five senses, project-based, field-based and community service-based, empowering students, involvement of students in decision making, by providing Opportunities to draw their own answers, conclusions, allowing learners to make small mistakes, make students mentally relax and comfortable.

Table. 2 Interpersonal as a most dominant Intelligence with Logical-mathematical

Item(s)	Statement of TEs
Teaching Style	Teaching styles depend on field base, field trips, and Multimodality, through concrete reach at abstract (TE-9).
	Appropriate teaching style depends on the learner's need, Discussion method and interactive teaching style (TE-3).

	Effective teaching style depends upon a learner-centred approach, empowering students, students make their own decisions (TE-13).
	The best teaching style depends upon the integration of different activities and collaborative work (TE-6).
Learning Style	Learning style depends upon the involvement of the five senses (TE-13).
	Learning style depends upon project-based, field-based and community service-based learning (TE- 6).
	Empowering students means giving them the opportunity to make small decisions to make their own answers, draw their own conclusions, and give them permission to make mistakes (TE-3).
	Learning styles depend upon when students feel comfortable and mentally relaxed (TE-9).
Acquisition of Knowledge	Acquisition of Knowledge depends upon teaching strategies that match their learning style (TE-6).
	Learners feel Secure, have no fear, feel authentic, comfortable, and relaxed as there is no intrapersonal disturbance (TE-13).
	Acquisition of Knowledge enhance by working on enhancement of Metacognition (TE-9).
	Coherence between teaching pedagogy, learning style and assessment, clear instruction, giving more opportunities to do something practical, give collaborative activities (TE-3).
Achievement of Learning Outcomes	Achievement of Learning Outcomes depends upon teachers identifying disabilities or deficiencies of students, creating freedom and a relaxed environment (TE-13).
	Achievement of Learning Outcomes depends upon using multiple strategies, by focusing on individual differences of learners (TE-9).
	By Empowering students, giving them permission to make mistakes and by giving individual attention to learners (TE-3).
	When teachers provide a relaxed and comfortable environment to the learner. (TE-6).
Enhancement of Students' Cognitive Development	Enhancement of Students' Cognitive Development depends upon avoiding stress and taking care of their health by involving them in the thinking process (TE-9).
	Give students project-based learning, and practical work (TE-13).
	Help students solve the problem and generate ideas by using logic and reasoning (TE-6).
	Enhancement of Students' Cognitive Development depends upon engaging more senses (TE-3).
Enhancement of teachers' Cognitive Development	Play games that engage minds (TE-13).
	Involve in the research process, by reading more books, and interacting with different people (TE-6).
	Enhancement of teachers' Cognitive Development depends upon improving focusing 0n tasks and playing different games such as crosswords (TE-9).

TEs perceived acquisition of knowledge can be enhanced when teaching strategies match with learning style, learners feel secure, when learners feel authentic, comfortable, relaxed, no intrapersonal

disturbance, enhancement of Metacognition, coherence between teaching pedagogy, learning style and assessment, clear instruction, give more opportunity to do something practical, give collaborative activities. Likewise, TEs perceived achievement of learning outcomes achieved by identifying disabilities or deficiencies of students, creating freedom, a relaxed environment in class, using multiple strategies, focusing on individual differences of the learners, Empowering students, and giving individual attention to learners. Similarly, TEs observed that Enhancement of Student's Cognitive Development is related to `leaner's physical health, increase student's thinking process, and by avoiding stress, giving students project-based, practical work, and Helping students to solve problems and generate ideas by using logic and reasoning. Lastly, the enhancement of a teacher's cognitive development can be enhanced by playing games that engage the mind, engaging in research, reading more books, and interacting with different people.

Naturalistic as the most dominant Intelligence with intrapersonal as the least dominant:

Naturalistic intelligence was perceived by (16%) TEs as their dominant intelligence. They defined their teaching style as focusing on individual needs, learning by doing, project-based teaching, and hands-on teaching approaches using the inductive and deductive methods. Likewise learning style is defined by TEs as engagement of the learner in the learning process, interest, and focusing on hands-on learning.

Table. 3 Naturalistic as the most dominant Intelligence with intrapersonal as the least dominant

Item(s)	Statement of TEs
Teaching Style	Teaching style depends on Learning by doing, project-based teaching and a hands-on teaching approach (TE-7).
	Teaching style depends on individual needs and uses inductive and deductive methods (TE-11).
Learning Style	Learning style depends upon the interest and focusing on engagement and involvement of the learner (TE-11).
	Effective teaching styles depend upon learning by doing and hands-on learning. (TE-7).
Acquisition of Knowledge	Acquisition of Knowledge depends upon Flexibility, relaxation and healthy environment and willingness and readiness for knowledge (TE-11).
	Acquisition of Knowledge depends upon experiments and asking more questions (TE-7).
Achievement of Learning Outcomes	Achievement of Learning Outcomes depends upon, the proper instructions of the teacher, and the teacher's pedagogy (TE-11).
	Focusing on level, capabilities and individual differences (TE-7).
Enhancement of Students' Cognitive Development	Engage students in curiosity, and develop new skills and experiences (TE-11).
	Enhancement of Students' Cognitive Development depends upon offering different choices and involving them in decision making (TE-7).
Enhancement of teachers'	Teachers' cognitive skills can be enhanced by managing stress and keeping their minds active (TE-7).

Cognitive Development	Enhancement of teachers' Cognitive Development to connect with social activities (TE-11).

Likewise, (16%) TEs whose dominant intelligence was the naturalistic perceived achievement of learning outcomes depend upon, proper instructions of the teacher, and teacher's pedagogy, learners' capabilities, and focusing on individual differences of the learner. Similarly, TEs define the Enhancement of Students' cognitive development depends upon the curiosity of learners about knowledge, by developing new skills, and experiences, offering different choices and involving the learner in decision making. Lastly, enhancement of a teacher's cognitive development depends upon managing stress, keeping the mind active, and connecting with social activities.

Linguistic as the most dominant Intelligence with Naturalistic as the least dominant:

Linguistic intelligence was perceived by (15%) TEs as their dominant intelligence. Who defined their teaching style depends upon age appropriateness, level of learner, nature of the task, interactive teaching approach, and how much students relate new information with previous. Similarly, they defined learning style as the capacity of the learner, and learner's own learning style, level of learner and nature of the task.

Table. 4 Linguistic as most dominant Intelligence with Naturalistic as least dominant

Item(s)	Statement of TEs
Teaching Style	Effective teaching style depends upon age appropriateness, level of learner, nature of the task and interactive teaching approach (TE-5).
	Teaching Style depends upon how much students relate new information to previous (TE-2).
Learning Style	Depends upon the capacity of the learner, and the learner's own learning style (TE-2)
	Effective learning style depends upon age appropriateness, level of learner, and nature of the task (TE-5).
Acquisition of Knowledge	Acquisition of Knowledge depends upon the way people look at things, critical thinking, and analytical thinking (TE-5).
	Acquisition of Knowledge depends upon the interaction with new people, situations and information (TE-2).
Achievement of Learning Outcomes	Achievement of Learning Outcomes Providing space, facilitate to learn and good redoubling (TE-5).
	By knowing the individual needs of students (TE-2).
Enhancement of Students' Cognitive Development	Engage students in the learning process and remove the gap between theory and practices (TE-5).
	Enhancement of Students' Cognitive Development depends upon providing comfort ness and a relaxed healthy environment (TE-2).
Enhancement of teachers' Cognitive Development	Enhancement of teachers' Cognitive Development depends upon Reading books and writing favourite memory (TE-2).
	By identifying patterns (TE-5).

Additional, achievement of learning outcomes depends on giving space to learners, facilitate to learn, good rebuilding, and knowing the individual needs of students. Moreover, enhancement of students' cognitive development depends on providing comfort ness and relaxation, a healthy environment, and removing the gap between theory and practices. Lastly, enhancement of teachers' cognitive development depends upon identifying patterns, reading books and writing favourite memory

Logical-mathematical as the most dominant Intelligence with Musical as the least dominant:

Logical-mathematical intelligence was perceived by (15%) TEs as their dominant intelligence. Who defined their teaching style by focusing on, the learner's mood, interest, nature of the topic, integration of technology likewise, Learning style depends upon flexible, comfortable environment teacher interaction with the learner, learner-centred approach and addressing individual's needs.

Table. 5 Logical-mathematical as most dominant Intelligence with Musical as least dominant

Item(s)	Statement of TEs
Teaching Style	Teaching Style depends upon the situation, learners' mood, interest and nature of the topic (TE-10).
	Effective teaching style depends upon the integration of technology, and new approaches (TE-4).
Learning Style	Learning style depends upon how the teacher interacts with a leaner flexible and comfortable environment (TE-10).
	Effective learning style depends upon a learner-centred approach and addresses an individual's needs (TE-4).
Acquisition of Knowledge	Acquisition of Knowledge depends upon practicing and implementing existing knowledge (TE-4).
	Acquisition of Knowledge depends upon reading, writing, and observation (TE-10).
Achievement of Learning Outcomes	Achievement of Learning Outcomes depends upon empowering students and giving them freedom and removing fear (TE-4).
	By using multiple strategies and avoiding vague instructions (TE-10).
Enhancement of Students' Cognitive Development	The cognitive development of students depends upon enhancing critical thinking and reasoning skills (TE-10).
	The cognitive development of students depends upon connecting new knowledge with previous knowledge (TE-4).
Enhancement of teachers' Cognitive Development	Enhancement of teachers' Cognitive Development depends upon self-assessment and reflection (TE-10).
	Focusing on the metacognition process and interacting with different people (TE-4).

Moreover, the acquisition of knowledge depends upon practicing and implementing existing knowledge, reading, writing, and observation. Additionally, Achievement of Learning Outcomes depends upon empowering students by giving them freedom, removing fear, using multiple strategies and avoiding vague instructions. Enhancement of students' cognitive development depends upon critical thinking,

reasoning skills, connect new knowledge with previous knowledge. Lastly, enhancement of a teacher's cognitive development depends upon self-assessment, reflection and interaction with different people

Discussion:

This research broadly aimed to explore the teachers teaching style through the inventory of multiple intelligence. The purpose of using MI inventory was to identify the most dominant and least dominant intelligence as well as dominant teaching style of teachers for their better learning and support for their professional growth. Six themes have been discovered from the responses of the teachers. The most dominant intelligence found in the majority of the Teachers was interpersonal, the second dominant intelligence was Mathematical and logical exploration from the response of the interviews, and Naturalistic intelligence emerged as 3rd dominant intelligence of the majority of the teachers. Whereas, linguistic intelligence is considered 4th dominant intelligence from the responses of the teachers and Musical intelligence has been found as least dominant intelligence according to interviews of teachers. The review of the current literature is also available on cognitive skills for each intelligence, learning outcomes and achievement, acquisition of knowledge, teaching style and learning style which is extensively described below.

Interpersonal as a First Most Dominant Intelligence of Majority of the TEs:
Individuals having strong intrapersonal intelligence are good at making social bonds, and working in groups or in teams. These kinds of people receive, process and understand knowledge by interacting with other people. Previous literature recommended some suitable teaching styles and strategies for teachers having strong intrapersonal intelligence. Gardner, (2017), suggested some teaching strategies such as Jigsaw activity, speech, group work, debate and dramas. Similarly, Connell (2005) also revealed that this kind of intelligence required teaching which involved more people. The suitable learning style for individuals having strong intrapersonal intelligence are communication, cooperation, collaboration or interaction with other people, they people use their sense of social bonding as a part of their learning process (Garrett, 2020; Gardner, 2017; Chang & Brickman, 2018). Moreover, Connell, (2005) highlighted that people possessing intrapersonal intelligence mostly acquire knowledge by using their insight about others to obtain, retain, process and understand knowledge. According to (National Research Council, (20120), these people enhance their cognitive skills by negotiating with other people and engaging themselves in rhetorical situations. Hence, researchers suggested some teaching styles which a teacher can adopt when he/she teaches children having strong intrapersonal intelligence such as providing the opportunity for learners to interact with their mates, creating positive and encouraging learning environments, practice such knowledge which helps them to be lifelong learners to make them able to solve their own problems. (Gouws, 2007; Celik, 2015).

Mathematical and Logical as a Second Most Dominant Intelligence of Majority of TEs:

Logical-mathematical intelligence is considered as the ability of the person to perform mathematical operations comfortably, identify and classify things in numbers and solve problems critically and logically to reach a conclusion (Mehiri, 2020). Some researchers suggested some teaching styles for teachers who possess logical-mathematical intelligence as their dominant intelligence such as presenting things in a logical sense of order, problem-solving approach, using graphs and charts, and timeline. Similarly,

Kenneedy, (2003) also explored some teaching styles such as performing numbers in an orderly way or performing experiments in a controlled way. Moreover, suitable learning style visual material for learners having strong logical-mathematical intelligence (Biscardi et al., 2019). Moreover, they acquire knowledge by using a sense of reasoning and logical sequence (Reveel & Wainnwright, 2009). Similarly, Ann and Logsdon (2020) also posited that using analytical and statistical programs, computers, hands-on projects, and visual representation helps them to acquire knowledge quickly and properly. Teachers can easily achieve learning objectives by enhancing the learner's intellectual skills, also providing opportunities to reflect on what they know in a variety of ways that go beyond the traditional task taking mode of assessment (Kalleenach & Viens, 2004). Moreover, teachers can achieve SLR by providing opportunities to identify and classify things, perform mathematical operations, solve problems, and by enhancing the logical and critical thinking of students (Mehiri, 2020). Lastly, people having strong logical-mathematical intelligence can enhance their cognitive skills by exploring and examining the problem in the way in which they feel comfortable (Nanda, Marwaha & Nanda, 2018). Likewise, Delgosheai and Delavari, (2012) also posited that by using logical argument and critical thinking one can easily enhance their cognitive skills.

Naturalistic as a Third Most Dominant Intelligence of Majority of the TEs:

People having dominant naturalistic intelligence understand knowledge by exploring their nature and it is the disposition of people who value natural phenomena. The best teaching style for these people are practical demonstrations, project-based teaching, and outdoors teaching (Quirantes, 2020). These people learn best by exploring surroundings, project-based learning, outdoor lessons, and using digital pictures of nature (Yunisari et al., 2016; Pardana et al., 2018). Teachers can achieve learning outcomes by keeping in mind the ability, traits and, capability of the leaner and treat them accordingly, because people having this kind of intelligence are some people totally depend on nature to learn and, some people focus on nature for particular work so the teacher should identify the nature of the learner to achieve the learning outcome (Rawlett, 2011). Moreover, these people can enhance their cognitive skills by participating in new activities and by exploring nature (Shah et al., 2017; Khan, 2020).

Linguistic as a Fourth Most Dominant Intelligence of Majority of the TEs:

Linguistic intelligence is the ability of any individual to get knowledge, solve problems or share ideas and thoughts by using spoken language. Teachers having strong Linguistic intelligence can teach through debate, speech, brainstorming, and storytelling (Hammoudi, 2010). Similarly, Armstrong, (2009), also suggested some teaching styles such as tap recording and journal writing. Moreover, writing a poem, stories, essays, word games and small group discussions are some fruitful activities (Hammoudi, 2010). Suitable learning styles for them are verbal and auditory. Also, these people can learn by using language (Connell, 2005). These people quickly acquire knowledge by focusing on spoken and written material (Ann & Ladsdon, 2020). Moreover, people having strong Linguistic intelligence can enhance their cognitive skills by enhancing their verbal and auditory (Vinod, Thomas & Nanda, 2013).

Musical intelligence also called rhythmic-musical-auditory intelligence is the capability of an individual to identify tones, sounds, tunes and rhythms and express their feelings emotions and thoughts by singing, playing and composing. They also are sensitive to rhythmic tones and melody (Octoberlina & Asrifan, 2021; Luthfiana, Ambarita & Suwarjo, 2018). Suitable teaching styles for these people are present

lessons through lyrics, musical pieces, or in rhythmical patterns, jingles (Ann & Logsdon, 2020). People having strong musical intelligence learn best by using auditory media and spoken information, also by sinning and in rhythmic patterns (Virganta et al., 2010; Mejzner, 2019). People enhance their cognitive skills and acquisition of knowledge by engaging them in music and performing any work comfortably by enjoying background music (Sheoran, Chhikara & Sangwan, 2019). Moreover, people recall their memories or information with the help of rhythms and melody (Mejzner, 2019).

Conclusion:

There is a wide implication of MI theory in all disciplines of education (e.g., Al Artha et al., 2018; Wijayanti & Rukiyati, 2021; Zhang, Liu & Sun, 2018). MI theory can be used as an effective tool in the teaching process to design teaching instruction and strategies (Hassan, Sulaiman & Baki, 2011). Moreover, MI base education is not just a solution to traditional education but also plays an important role as an organizational tool to enhance the current education system (Gardner, 2017). Hence, MI is considered a key factor to support teachers to be specific while developing their instructional designs and can easily find the capabilities, interests, and individual needs of students. Also, teachers will be more flexible in planning and developing teaching strategies (Hassan, Sulaiman & Baki, 2011).

Moreover, the study by Ann and Logsdon (2020) also highlighted some benefits of MI theory in teaching such as individualization of students learning, building effective teaching strategies and subject matter, and enhancing the performance of students and acquisition of knowledge. The main aim of implementing multiple intelligence theory in teaching is to make teaching and delivery of subject matter a more flexible manner, this can help students as well by providing the opportunity for them to identify their dominant learning style which helps them to achieve their learning goals (Pehilvan & Durgut, 2017).

Ultimately, understanding students' multiple intelligences represents one way of adjusting teaching so that it pays attention to the students' individual characteristics (see also Määttä & Uusiautti, 2018). This kind of approach can provide teachers with optimal teaching experiences and a sense of meaningfulness, even enthusiasm, as they perceive the results of a student-centred teaching style (see e.g., Wenström & Kuortti, 2022). Most importantly, the approach provides students with a positive self-image of themselves as learners (see e.g., Salmela, Uusiautti, & Määttä, 2015) and an optimistic, self-appreciating attitude toward their future (Hyvärinen et al., 2022).

There are some recommendations based on samples and research methods. The present study is qualitative, which would not be generalizable in all aspects. The qualitative findings will provide an opportunity for other research methods to conduct some more studies to generalize the results. Moreover, the population of this study is university teachers so in future more studies should be conducted also among teachers of other education levels. However, this research contributed to the discussion of a perspective rarely studied. Teacher educators are in the key role of how prospective teachers build their teaching styles, what kinds of emphases they choose, and which elements they consider important in their teaching.

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