

# Matching Students' Dominant Intelligences with their Fields of Specialization: Did Students Select the Right Specialization?

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## Abstract

The purpose of this article is to investigate the differences in multiple intelligences profiles among university students according to gender and the field of specialization, and demonstrate how the application of Gardner's (1993) multiple intelligences (MI) theory can be used as an indicator to the appropriateness of the students' selection to his/her college program. This is a survey study and the participants of the study are (320) undergraduate first-year students from Dhofar University (DU). Data analyses are carried out using means, standard deviations, and multivariate analysis of variance (MANOVA). The data for this study is collected through a 5-point Likert scale called "Multiple Intelligences Scale". The study reveals that intrapersonal intelligence has the highest score and ranks first always. Also, the study finds that the students from the specializations: Computer, Mathematics, Languages, Social Sciences, Accounting and Finance (A&F), Management and Marketing (M&M), Management Information Systems (MIS), Engineering, and Law made a good decision about selecting their college programs. On the other hand, the study reports that MI profiles of students from Education and Architecture does not match the intelligence profiles required by each specialization. In the light of the findings, the study recommends researchers as well as career counselors to start a collaborative work to further understand and explore the benefits of using Multiple Intelligences theory as a framework for career counseling.

**Keywords:** Multiple Intelligences, Gender, Undergraduate Students, Fields of Specialization.

## Introduction

After finishing high school, students have to select the appropriate college and appropriate specialization. Choosing a college is one of the most important decisions that students make in their life. This decision would have a lasting impact on their personal and professional life.

When students make the decision about selecting the college or program, many factors or attributes conflict in their mind. Van Deuren and Santema<sup>(33)</sup> report that personal interest, labor market, and location of the institution are the most important attributes that impact the selection process. Owen and Jensen<sup>(29)</sup> claim that the personal interest in the program is the most important characteristic taken into consideration when selecting the college. Factors related to the labor market such as employability, expected earnings, and career opportunities come in the second place regarding the importance<sup>(33)</sup>.

Since it was published in 1983, MI theory challenged the traditional perception of intelligence which basically recognized one or

two types of intelligences. MI theory confirmed the diversity of intelligences among people and highlighted the way of using these intelligences to enrich the society and diversify its culture and civilization, which contributes to developing the society and its advancement<sup>(22) (23)</sup>.

Gardner reported that there are nine different intelligence capacities that help us know, understand, and explore the world. Actually, the experience in psychology and then studying human cognition in addition to human potential guided Gardner to develop the different types of intelligences<sup>(11)</sup>.

Gardner<sup>(19)</sup> said explicitly that all of us have all the intelligences, but the intelligences function in a unique way. Gardner claims that a learner could be excellent in math but not good in literature while another learner could be excellent in arts but be very bad in grammar.

Armstrong<sup>(11)</sup> claims that the theory of Multiple Intelligences could be important and useful in the domain of employability and career

opportunities. He reports that there are many applications of MI theory but one of the new applications that he suggests is career counselling. MI theory represents a good tool to help the young people begin to think and select their career aspirations. He suggests that students in high schools can be involved in an ongoing process of self-assessment to find out or identify what jobs are suitable for them. One of the most important and useful self- assessments is multiple intelligences assessment.

Many students aren't aware of their own skills and experience, or what different jobs require. They need more meaningful careers advice. If the student after high school attends a college which is not aligned with his personal interest or for which he is not academically prepared, then he may not complete the program, and he might change the college after one or two years, or he even drops out. Al Ghanboosi <sup>(7)</sup> reports that the drop-out rate in Sultan Qaboos University (SQU), Oman, between 1998 and 2000, ranged from 6.8% to 7.8% of the total number of students and it is gradually increasing. The study revealed that the academic factors are the main factors that push the students to drop out before completing their study.

Engineering College, for example, requires strong mathematical capabilities. If a student is weak in mathematical intelligence and joins an engineering program he would have difficulty in continuing his study and maybe finally give up and drop-out. Beyond the Rhetoric Improving College Readiness through Coherent State Policy <sup>(12)</sup> reports that every year in the United States approximately 60 % of first-year college students are not academically ready for postsecondary studies despite that they are fully eligible to attend the college. After the students enroll in the program and take a placement test, they are informed that they must attend remedial courses in English or mathematics. This huge gap between eligibility and readiness is costly to all stakeholders such as students, families, and institutions.

Based on multiple intelligences theory, Armstrong <sup>(11)</sup> suggests career guidance or a list of occupations categorized by primary intelligence as follow:

- Visual-Spatial Intelligence (Picture smart): Architects, Interior Designers, Fashion Designers, Photographers, Painters, Animators.
- Bodily-Kinesthetic Intelligence (Body Smart): Actors, Dancers, Athletes, Yoga Teachers, Fire Fighters, Police Force.
- Logical Mathematic Intelligence (Number Smart): Engineers, Scientists, Economist, Auditor, Accountant, Bookkeeper, Math or Science Teacher.

- Musical-Rhythmic Intelligence (Music Smart): Musician, Instrument Maker, Piano Tuner, Songwriter, Studio Engineer, Singer, Music Teacher.

- Verbal-Linguistic Intelligence (Word Smart): Librarian, Archivist, Writer, TV Announcer, Journalist, Lawyer, Proofreader, Language Teacher.

- Naturalist Intelligence (Nature Smart): Wild life Photographer, Zoologist, Naturalist, Marine Biologist, Farmer, Ecologist, Nature Guide.

- Interpersonal Intelligence (People Smart): Educators, Manager, Coach, HR-Professionals, Politicians, Sociologist, Counselor, Nurse, Public Relations Person, Travel Agent.

- Intra-Personal Intelligence (Self Smart): Psychologist, Clergyman, Psychology Teacher, Therapist, Counselor, and Entrepreneur.

The purpose of this article is to investigate the differences in multiple intelligences profiles among students at Dhofar University (DU) according to gender and the field of specialization, and demonstrate how the application of Gardner's (1983) multiple intelligences (MI) theory can be used as an indicator to the appropriateness of the students' selection to his/her college program.

### Statement of the Problem:

If every learner understands his uniqueness in the classroom, he will increase his opportunities for learning and his ability to align his potentials to specific tasks. 'Multiple intelligences' is one aspect of a learner's uniqueness. Actually, MI theory assumes that if there are programs that demonstrate the skills of real life in the eight intelligences for individuals from an early age then the individuals will have clear and more reliable bases to select their future career <sup>(11)</sup>.

Success in life is basically attributed to the right and smart decisions that a person takes at crucial points in his life, and one of them is choosing the appropriate field of specialization when applying to the university. Multiple Intelligences plays a large role in the field of interest of students in school. It is vital because it creates a platform for students to be able to develop and hone certain skills which can lead them to the track that they soon deserve in the future. Pabalinas <sup>(31)</sup> reports that the first and the second inclinations to multiple intelligences show a highly significant relationship on the choice of career.

Anitha <sup>(10)</sup> reveals that there is a high correlation between Multiple Intelligence and career aspiration of secondary school pupils of Kerala. Al Taieb <sup>(8)</sup> invites educators in high schools to employ Multiple Intelligences Theory when advising Grade 12 students in selecting their future field of specialization. Tacuban <sup>(35)</sup> designs

and evaluates the effectiveness of Career Decision Support System Using Multiple Intelligences in determining the dominant intelligence of the student.

The researcher believes that this research would extend students' knowledge and guide them in making the decisions regarding a student's corresponding mode of interest with their chosen fields of specializations. This study highlights the relationship between multiple intelligences profiles of the students of Dhofar University (DU) and the selected field of specialization.

This issue is very important, and it could be crucial for the student before selecting the college or the field of specialization. It is also useful for the academic advisors in the university to direct their students to the field of specialization which is fit to their multiple intelligences profiles and accommodate the right student in the right specialization. The main aim of this study is to determine if the university students are accommodated in the right specializations or not. A basic premise of this study is that in-depth consideration of individual's MI profile would help and guide students in the college program decision-making process. Multiple Intelligences theory is used in this study to check if the selection of the college programs is appropriate or not.

### Research Questions

1. What are the multiple intelligences profiles of DU students?
2. What are the multiple intelligences profiles of DU students according to the gender?
3. What are the multiple intelligences profiles of DU students according to the field of specialization?

### Research Hypotheses

From the second question, the following hypothesis emerged:

There are no statistically significant differences at ( $\alpha = 0.05$ ) in the multiple intelligences of the profiles of DU students attributed to gender.

### Significance of the Study

It is hoped that this study would encourage educators to embrace in their teaching the idea that students are gifted with multiple intelligences besides mathematical and linguistic abilities. The teachers' awareness, of the students' different ways in which students demonstrate their understanding of materials, can help them design various experiential and successful learning activities and contextualized instructional materials that would make them excel in and suit their area of interest.

Enlighten the students in the high school or first-year students, at the university, about the theory of multiple intelligences would help the student choose the appropriate college and the specialty which matches his or her intelligences profile. If the multiple intelligences scale is administered at the end of the high school, then the students would be more aware of their capabilities, skills, and intelligences and hence the chance of completing the university would be very high and consequently, the drop-out rate would be descending.

Since the researcher does not find a similar study in Oman in general or in Dhofar provenance in particular, investigating the differences in multiple intelligences profiles or identifying the dominant intelligences of university students and matching them with the students' chosen fields of specialization, is of great significance to Oman.

### Study Limitations:

The generalization of the findings of this study would be limited by:

- (a). A sample of males and females students in Dhofar University.
- (b). The validity and reliability of the instrument that is used in the study.

### Operational Definitions of the Study's Terminology: Gardener <sup>(19)</sup> <sup>(20)</sup> <sup>(21)</sup>

**Verbal-Linguistic Intelligence:** refers to an individual's ability to display a facility with words and languages.

**Mathematical-Logical Intelligence:** refers to the individuals who naturally excel in mathematics, computer programming, and other logical reasoning.

**Musical Intelligence:** refers to individuals who display greater sensitivity to sounds, rhythms, tones, and music. People with strong musical intelligence normally have a good pitch and are able to sing, play musical instruments, and compose music.

**Visual-Spatial Intelligence:** refers to the ability to visualize and mentally manipulate objects. People with strong visual-spatial intelligence have a strong visual memory and are often artistically inclined.

**Bodily-Kinesthetic Intelligence:** refers to the ability to enjoy acting or performing. People with strong bodily-kinesthetic intelligence often learn best by physically doing something. Bodily-Kinesthetic Intelligence is measured by the test of multiple intelligences

**Interpersonal Intelligence:** the ability to communicate effectively and empathize easily with others. People with strong Interpersonal Intelligence are usually extroverts and are characterized by their sensitivity to others' moods, feeling, and motivation.

**Intrapersonal Intelligence:** the ability to have high self- awareness, and people with strong Interpersonal Intelligence can understand their own emotions, goals, and motivations.

**Naturalist Intelligence:** refers to individuals who have greater sensitivity to nature. They are good at taming and interacting with animals. All Intelligences are measured by Multiple Intelligences scale are developed by the researcher.

### **Theoretical Literature and Related Studies**

Gardner <sup>(16)</sup> reports that Multiple Intelligences theory (MI) define the intelligence based on three components: (1) Intelligence is a set of skills that can be used to solve problems or overcome difficulties, (2) Intelligence is considered if there is an achievement of a product valued by the culture, and (3) Intelligence is considered when reaching a creative solution that leads to new knowledge.

Armstrong <sup>(11)</sup> displays in details the intelligences of MI theory in his book "Multiple Intelligences in The Classroom". Armstrong highlights some important points regarding the theory. These points are: (1) MI theory suggests that there are many intelligences, not just one intelligence. Each one of us possesses the eight intelligences and they work together in an amazing and unique way. (2) With encouragement, training, and appropriate program, most people can develop any intelligence to a good level of competency. (3) All intelligences function together in a complicated way. (4) No standard features exist for anyone to be smart or intelligent in any field. Some people don't have the ability to read or write, but he is a great poet or a famous orator.

There are some important key points that explain the essence of MI theory: (1) Despite that every one of us possesses the eight intelligences, we are all different because the strength of each intelligence varies and that's why everyone has a different intelligences profile. (2) The intelligences could work together smoothly or each intelligence works independently. (3) Education can be improved if the materials and learning activities are designed based on the intelligences profile of the students. Gardner announced his theory starting with seven intelligences. Later he added two more intelligences <sup>(20)</sup>.

This theory is the framework of this study. This research explores the multiple intelligence profiles of the students. It considers eight intelligences and excludes existential intelligence because accordingly, it has yet to experience full acceptance by educators in the classroom

### **Previous Related Studies**

Mustafa, Abu Jado, and Onoz <sup>(29)</sup> held a study aimed to explore the multiple intelligences of Jordanian students at Yarmouk University. The researchers use the Multiple Intelligences Test (MIT) prepared by Onoz (2009). 759 students from Yarmouk University participated in the study. The results reveal that the linguistic intelligence came first, while the spatial intelligence came last.

Al-Faoury, Khataybeh, and Al-Sheikh <sup>(5)</sup> studied the intelligences types of the Jordanian students in different public and private universities. To collect data, the researchers used a survey which was administered to 1436 students. The results show that females excelled in linguistic and interpersonal intelligence. The results also show that there are significant differences in the logical intelligences in favor of the governmental universities. The study does not find any significant differences in the multiple intelligences that could be attributed to the average factor.

Al-Aslani <sup>(4)</sup> conducted a study to explore the impact of using a remedial strategy based on MI theory on improving the achievement in the geometry of slow learners. Attitudes towards geometry have also been investigated. The results show that the remedial strategy has a positive effect and the performance of the experimental group is better than the performance of control group.

Ahmad <sup>(3)</sup> explored the impact of a program designed according to MI theory on improving the academic achievement and developing the creative thinking of students in secondary commercial school. The number of participants was (120) female students. The sample is divided into (40) students who represented the control group and (80) students represented the experimental group. The results show that the program has a positive effect and the academic performance of the experimental group is better than the performance of the control group.

Alumran <sup>(9)</sup> explored the multiple intelligences of the students at the University of Bahrain and investigated the difference in multiple intelligences with respect to gender and the field of specialization. The researcher developed a multiple intelligences test to find out the intelligences profiles. The participants were (238) students from (13) different specializations. Using MANOVA, results found that the dominant intelligences are social intelligence and personal intelligence.

Al Faqaawi <sup>(6)</sup> examined the multiple intelligences and its relationship with value system to the university students at Al-Azhar University in Gaza. The participants were (400)

students of both gender from the scientific and literary colleges. The results of the study show that the intelligences (personal, physical, and social) are more common intelligences among Al-Azhar University students, while intelligences (music, natural, and linguistic) are least common.

Al Taieb <sup>(8)</sup> explored the multiple intelligences of the students at University of Tripoli and investigated the difference in multiple intelligences with respect to the field of specialization. The participants were (120) students from Medical College, Physical Education College, and Education College. The study shows that the Dominant intelligence in each college is different while the musical intelligence came at last rank in all colleges.

## Methodology

### The Study Sample

The sample of this study is composed of (320) students from Dhofar University (DU), Oman, undergraduate first year students. The study is conducted in the fall semester of the academic year 2017-2018. The students are from Bachelor and Diploma programs and they are selected randomly from different colleges and different specializations. Table (1) shows the distribution of (DU) study sample according to gender and the field of specialization.

Table (1) Distribution of DU study sample according to gender and the field of specialization

	Category	Number	Percent %
Gender	Males	141	44.1
	Females	179	55.9
	Total	320	100.0
Field of Specialization	Computer	20	6.3
	Mathematics	9	2.8
	Education	15	4.7
	Languages	29	9.1
	Social Science	40	12.5
	Accounting and Finance (A&F)	17	5.3
	Management and Marketing (M&M)	22	6.9
	Management Information Systems (MIS)	26	8.1
	Engineering	61	19.1
	Architecture	28	8.8
	Law	53	16.6
	Total	320	100.0

### Study Instruments: Multiple Intelligences Scale

After reviewing the literature, the researchers developed a scale to measure the MI profile of the students. The scale is mainly developed by taking advantage from Mackenzie <sup>(27)</sup>, Armstrong <sup>(11)</sup>, and Abdelkarim and Al Jadiry <sup>(1)</sup>. Each item in the scale has five responses: always apply, apply, apply sometimes, does not apply, and never apply. The maximum weight is

(5) and it is given to the response always apply while the minimum is given (1) to the response never apply. The maximum score for each intelligence is 40 because there are eight statements to assess each intelligence.

### Tool Validity

To confirm the validity, the scale is examined first by five professors (The specializations of professors are: Psychology, Measurement and Evaluation, Curricula and instruction). The comments and suggestions of the referees have been studied and the final version of the scale has been developed in both languages: Arabic and English.

### Tool Reliability

Regarding the reliability, the researchers applies the scale on an exploratory sample of (23) students. The reliability coefficient is calculated by using Cronbach Alpha. Table (2) explains the values of internal consistency coefficients of each intelligence.

Table (2) Values of Internal Consistency Coefficients of Each Intelligence

No.	Intelligence	Number of Items	Value of Cronbach alpha coefficient
1	Linguistic Intelligence	8	0.84
2	Logical-Mathematical Intelligence	8	0.92
3	Spatial Intelligence	8	0.75
4	Kinesthetic Intelligence	8	0.89
5	Musical Intelligence	8	0.93
6	Interpersonal Intelligence	8	0.74
7	Intrapersonal Intelligence	8	0.90
8	Naturalist Intelligence:	8	0.83

### Study Procedures:

The following procedures are implemented:

1. Preparing the MI scale after reviewing the theoretical literature
2. Getting the consents from the research department to conduct the study.
3. Calculating validity and reliability of the scale.
4. Selecting the sample from undergraduate students at Dhofar University.
5. Administering the scale on the study sample.
6. The statistical analyzing processing.

### Study Variables:

The following are the variables of the study:

#### Independent variable:

- 1) Gender (Males, females)

- 2) Specializations of the students (Computer, Mathematics, Education, Languages, Social Science, Accounting and Finance (A&F), Management and Marketing (M&M), Management Information Systems (MIS), Engineering, Architecture, and Law).

**Dependent variable:** The intelligences of students.

## Data Analysis

### Analyzing the MI Scale

- 1) After collecting the MI scale from all participants. Every participant in each specialization is given a special code. Each code consists of two or three letters to identify the specialization followed by M (male) or F (female) and Number. For example, engineering students may have the code ENG M 1 for boys or ENG F 1 for girls.
- 2) The MI scale is written in an excel sheet and it is programmed in such a way that the program lists the average of each intelligence and draws a column chart and pie chart on a different sheet for each participant.
- 3) The response to the MI scale of each participant is entered into the computer manually and the file is saved as the code of the participant. To make sure that the data is entered correctly, the researcher and his assistants randomly check the response of five statements. If there is one single mistake, the entering of the whole (64) statements is repeated.
- 4) Responses of all participants in each specialization are then compiled into one file saved as the name of specialization. Average, STDEV, and charts are finally extracted.
- 5) Copying data from an excel program to the SPSS program. The MANOVA test is carried out to analyze data and extract the results.

(SPSS) program is used to calculate the means and standard deviation. MANOVA test is used to find out if the differences in multiple intelligences profiles are significant or not taking into account that there are two independent variables in the study: gender (two levels) and specialization (11 level). A MANOVA is a statistical test; it is the same as an ANOVA test but with multiple dependent variables. MANOVA stands for multivariate analysis of variance. It tests if there is a significant difference between the means of multiple groups.

The dependent variables are continuous and the independent variables are categorical. The MANOVA uses the covariance-variance between variables to test for the difference between vectors of means. This is in comparison to an ANOVA which tests for differences between means. The researcher used MANOVA instead of multiple ANOVAs because the MANOVA is

designed to handle multiple dependent variables at one time.

## Results and Discussions Related to the First Question

The first question is: What are the multiple intelligences profiles of DU students? Means and standard deviation of the sample scores are calculated. Table (3) shows the results.

Table(3)Multiple Intelligences Profiles of the Sample of DU.

Type of Intelligence	Mean	STDEV	Rank
Intrapersonal	30.8375	4.25354	1st
Linguistic	28.5125	4.32531	2nd
Kinesthetic	28.1688	4.52956	3rd
Interpersonal	28.0156	4.75379	4th
Logical	27.7500	4.92324	5th
Spatial	27.0594	5.04210	6th
Naturalist	26.5969	5.04618	7th
Musical	24.3438	5.85407	8th

Table (3) shows that intrapersonal intelligence comes first with a mean of (30.8375) and STDEV of (4.25354) while linguistic intelligence lies at the second rank with a mean score of (28.5125) and STDEV of (4.32531). The musical intelligence occupies the last rank with a mean of (24.3438) and STDEV of (5.85407).

The result of having the intrapersonal intelligence in the first rank can be attributed to the fact that the sample of the study belongs to the late adolescence stage. Based on the theory of [Developmental Psychology](#) of Erikson (1959), the sample of the study lies between stage number 5 (Adolescence stage) and stage number 6 (Young Adult). During stage 5, adolescents search for a sense of self and personal identity, through an intense exploration of personal values, beliefs, and goals. During this period, they explore possibilities and begin to form their own identity based on the outcome of their explorations. In stage 6, the people begin to share their self more intimately with others. They explore relationships leading toward longer-term commitments with someone other than a family member<sup>(28)</sup>.

Having the linguistic intelligence in the second rank could be attributed to the nature of the activities and teaching methods used in the school level or university level which depends extensively on linguistic intelligence among students through using teaching methods based mainly on lecturing and questioning as well as using verbal and written language in different types of assessment and evaluation.

The musical intelligence ranks last and this can be attributed to the fact that the university environment is highly dominated by academic activities which are full of reports, seminars, projects, and exams, while the other activities such as musical events are just conducted on specific occasions such as the national day or graduation ceremony.

The results of the current study are in harmony with the results of the study of Al- Faouri, Khataybeh, and Al-Sheikh <sup>(5)</sup> where in both studies the intrapersonal intelligence ranks first. Also, in both studies, kinesthetic intelligence ranks the third. But the linguistic intelligence and interpersonal intelligences exchanged the rank. In this study, linguistic ranks second and interpersonal ranks fourth while in the other study linguistic ranks fourth and interpersonal ranks second. This means that the top four intelligences in both studies are the same.

The same results are repeated in Alumran <sup>(9)</sup> where the top four intelligences are interpersonal, intrapersonal, linguistic, and kinesthetic consequentially. This study is also partially consistent with the result of the study of Mustafa, Abu Jado, & Onoz <sup>(29)</sup>. In both studies, the intrapersonal intelligence and linguistic intelligence occupies the highest two intelligences but they exchange the rank. In the current study intrapersonal comes first and linguistic comes second while in the study of

Mustafa, Abu Jado, & Onoz <sup>(29)</sup> linguistic ranks first and intrapersonal ranks second.

Regarding the musical intelligence, the students of this study give themselves the lowest score which is also in a full agreement with Al- Faouri, Khataybeh, & Al-Sheikh <sup>(5)</sup> where the musical intelligence ranks the last. In Alumran <sup>(7)</sup>, the musical intelligence ranks the seventh out of nine intelligences while in Alumran study the existential intelligence has been also considered. In the study of Mustafa, Abu Jado, & Onoz <sup>(29)</sup>, the musical intelligence ranks forth which represents a clear difference from other studies.

**Results and Discussions Related to the Second Question:**

The second question is: What are the multiple intelligences profiles of DU students according to the gender? Means and standard deviation of the sample scores are calculated. Table (4) shows the results for both males and females.

Table (4) multiple intelligences profiles of males and females of DU students

Type of Intelligence	Males			Females		
	Mean	STDEV	Rank	Mean	STDEV	Rank
Linguistic	28.2979	4.09834	2nd	28.6816	4.50022	2nd
Logical	28.1348	5.03732	3rd	27.4469	4.82401	6th
Spatial	26.3972	5.35174	7th	27.581	4.73427	5th
Kinesthetic	27.8582	4.19112	4th	28.4134	4.7767	3rd
Musical	23.6596	5.91467	8th	24.8827	5.76532	8th
Interpersonal	27.539	4.75472	5th	28.3911	4.73252	4th
Intrapersonal	30.1631	4.11205	1st	31.3687	4.29898	1st
Naturalist	27.1489	5.16158	6th	26.162	4.92432	7th

Table (4) shows that the distribution of the intelligence of the males' sample is ranked as follows: Intrapersonal, Linguistic, Logical, Kinesthetic, Interpersonal, Naturalist, and finally the Musical intelligence. Regarding the females sample, the rank is as follows: Intrapersonal, Linguistic, Kinesthetic, Interpersonal, Spatial, Logical, Naturalist, and finally the Musical intelligence.

Table (4) shows that females estimated their intelligences higher than males in all intelligences except in mathematical and Naturalist intelligence. Szymanowicz & Furnham (34) report that the results of many researches conducted all over the world indicate that males consistently tend to estimate their

intelligence, especially mathematical intelligences, higher than females.

In general, the most familiar intelligences for both males and females were Intrapersonal and Linguistic. The Logical intelligence is more favorable in the male sample while the Spatial intelligence is more favorable in the female sample.

**Results and Discussions Related to the Third Question:**

The third question is: What are the multiple intelligences profiles of DU students according to the field of specialization? Means and standard deviation of the sample scores are calculated. Table (5) shows the results for each specialization.

Table (5) Multiple Intelligences Profiles of DU Students According to the Field of Specialization.

		Linguistic	Logical	Spatial	Kinesthetic	Musical	Interpersonal	Intrapersonal	Naturalist
Computer N=20	Mean	27.55	28.30	27.50	27.80	23.95	27.20	30.15	25.70
	Rank	4 <sup>th</sup>	2 <sup>nd</sup>	5 <sup>th</sup>	3 <sup>rd</sup>	8 <sup>th</sup>	6 <sup>th</sup>	1 <sup>st</sup>	7 <sup>th</sup>
	STDEV	5.104	4.813	4.904	4.275	4.651	4.991	4.499	4.054
Mathematics N=9	Mean	28.78	30.56	26.11	25.78	22.22	28.11	33.78	23.22
	Rank	3 <sup>rd</sup>	2 <sup>nd</sup>	5 <sup>th</sup>	6 <sup>th</sup>	8 <sup>th</sup>	4 <sup>th</sup>	1 <sup>st</sup>	7 <sup>th</sup>
	STDEV	2.863	4.362	3.757	3.193	6.610	3.219	3.383	3.523

Education N=15	Mean	30.40	27.80	27.27	29.80	26.73	26.80	31.87	25.80
	Rank	2 <sup>nd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	3 <sup>rd</sup>	7 <sup>th</sup>	6 <sup>th</sup>	1 <sup>st</sup>	8 <sup>th</sup>
	STDEV	3.661	4.784	4.832	3.234	3.474	4.887	3.160	3.745
Languages N=29	Mean	30.07	28.00	26.72	28.41	27.07	28.28	30.66	27.21
	Rank	1 <sup>st</sup>	5 <sup>th</sup>	8 <sup>th</sup>	3 <sup>rd</sup>	7 <sup>th</sup>	4 <sup>th</sup>	2 <sup>nd</sup>	6 <sup>th</sup>
	STDEV	5.264	5.484	5.304	4.725	3.854	4.391	3.754	4.586
Social Science N=40	Mean	27.70	25.31	27.00	27.63	24.18	28.80	30.60	25.81
	Rank	3 <sup>rd</sup>	7 <sup>th</sup>	5 <sup>th</sup>	4 <sup>th</sup>	8 <sup>th</sup>	2 <sup>nd</sup>	1 <sup>st</sup>	6 <sup>th</sup>
	STDEV	4.485	4.196	4.496	4.265	6.563	4.445	4.349	5.509
A&F N=17	Mean	26.12	27.12	24.82	26.76	21.12	26.71	31.18	23.12
	Rank	5 <sup>th</sup>	2 <sup>nd</sup>	6 <sup>th</sup>	3 <sup>rd</sup>	8 <sup>th</sup>	4 <sup>th</sup>	1 <sup>st</sup>	7 <sup>th</sup>
	STDEV	4.470	4.794	5.736	5.562	8.321	4.858	4.812	6.153
M&M N=22	Mean	30.05	25.73	25.64	27.00	23.77	27.55	31.05	27.00
	Rank	2 <sup>nd</sup>	6 <sup>th</sup>	7 <sup>th</sup>	4 <sup>th</sup>	8 <sup>th</sup>	3 <sup>rd</sup>	1 <sup>st</sup>	5 <sup>th</sup>
	STDEV	4.146	5.166	5.786	4.231	6.256	4.657	5.038	6.362
MIS N=26	Mean	27.85	28.15	27.38	27.35	23.69	31.46	29.46	26.08
	Rank	4 <sup>th</sup>	3 <sup>rd</sup>	5 <sup>th</sup>	6 <sup>th</sup>	8 <sup>th</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	7 <sup>th</sup>
	STDEV	3.906	3.530	4.041	4.214	6.291	4.178	3.911	5.283
Engineering N=61	Mean	27.79	29.61	28.54	28.57	25.03	26.69	30.15	27.98
	Rank	6 <sup>th</sup>	2 <sup>nd</sup>	4 <sup>th</sup>	3 <sup>rd</sup>	8 <sup>th</sup>	7 <sup>th</sup>	1 <sup>st</sup>	5 <sup>th</sup>
	STDEV	3.729	4.831	4.857	3.853	4.604	4.617	4.012	4.193
Architecture N=28	Mean	28.14	26.679	27.82	31.43	26.07	29.36	32.11	27.39
	Rank	4 <sup>th</sup>	7 <sup>th</sup>	5 <sup>th</sup>	2 <sup>nd</sup>	8 <sup>th</sup>	3 <sup>rd</sup>	1 <sup>st</sup>	6 <sup>th</sup>
	STDEV	4.805	5.538	5.844	5.399	5.805	4.747	5.050	5.801
Law N=53	Mean	29.55	28.02	26.26	27.68	22.70	27.66	31.19	27.17
	Rank	2 <sup>nd</sup>	3 <sup>rd</sup>	7 <sup>th</sup>	4 <sup>th</sup>	8 <sup>th</sup>	5 <sup>th</sup>	1 <sup>st</sup>	6 <sup>th</sup>
	STDEV	3.714	4.725	5.058	4.669	6.216	4.965	4.029	4.586
DU N=320	Mean	28.51	27.75	27.06	28.17	24.34	28.02	30.84	26.60
	Rank	2 <sup>nd</sup>	5 <sup>th</sup>	6 <sup>th</sup>	3 <sup>rd</sup>	8 <sup>th</sup>	4 <sup>th</sup>	1 <sup>st</sup>	7 <sup>th</sup>
	STDEV	4.325	4.923	5.042	4.530	5.854	4.754	4.253	5.047

The following results are revealed from table (5):

In Computer department, the strongest intelligences are intrapersonal and logical-mathematical. According to Armstrong <sup>(11)</sup> the computer students should be strong in logical-mathematical intelligence. The result of computer department shows that the right students are in the right specialization.

The profile of mathematics students shows that the order of intelligences is: Intrapersonal, logical-mathematical, linguistic, and interpersonal. The profile is excellent for mathematics teacher. The students in this department are mathematician first and educator second. The result of Mathematics department shows that the students are accommodated in the right specialization.

According to Armstrong <sup>(11)</sup> the educators (or teachers) should be strong in interpersonal intelligences and linguistic intelligence. Table (5) shows that the students in this department are strong in linguistic intelligences (ranks second) but they are very weak in interpersonal intelligence (ranks sixth). Based on this result, the department is requested to plan and apply activities that develop interpersonal intelligence such as cooperative learning activities, leadership activities, and opinion-based activities <sup>(14)</sup>.

The Languages department students have an excellent intelligence profile. The linguistic intelligence ranks the first, intrapersonal ranks second, and interpersonal ranks fourth. This confirms that the students of this department are absolutely in the right specialization.

For Social Studies department, the top three intelligences are: intrapersonal, interpersonal, and linguistic. This result is great because interpersonal and linguistic intelligences are exactly what the students need in their work. The result shows that the right students are in the right specialization.

Based on Armstrong <sup>(11)</sup> the accountant should have strong logical-mathematical intelligence. Refereeing to table (5) the strongest intelligences in Accounting and Finance (A&F) are intrapersonal intelligence and logical-mathematical intelligence. The result of this department shows that the right students are in the right specialization.

The students of [Management and Marketing](#) (M&M) department should be strong in linguistic intelligence as well as interpersonal intelligence. Table (5) shows that linguistic ranks second and interpersonal intelligence ranks third. This confirms

that the students of this department are in the right specialization.

Regarding [Management Information Systems](#) (MIS) department, the case is totally different. The students of this department should acquire a combination of intelligences in order to succeed in their study and their future profession. They should be strong in logical-mathematical intelligence to deal with the computer. Interpersonal and intrapersonal intelligence are very important in management. The profile of the students in this department shows that interpersonal ranks first, intrapersonal intelligence ranks second, logical-mathematical intelligence ranks third. The result confirms that the students of this department are absolutely in the right specialization.

The profile of the engineering students shows that intrapersonal ranks first, logical-mathematical intelligence ranks second and spatial intelligence ranks fourth. According to Armstrong <sup>(11)</sup> the engineering students should be strong in both logical-mathematical and spatial intelligences. The result shows again that the students of this department are in the right specialization.

Armstrong <sup>(11)</sup> reports that Architects should be strong in Visual-Spatial Intelligence (Picture smart). Analyzing the results of table (5) shows that the spatial intelligence of the students of Architecture Department ranks fifth which indicates that the students in this department need urgently to develop their spatial intelligence. The department should plan, design, and apply many activities and instructional strategies in this regard such as: Visualization, Color cues, Sketching ideas, and Graphic symbols <sup>(33)</sup>.

The Law students should acquire a strong linguistic intelligence. The profile of law specialization shows that linguistic intelligence ranks second after the intrapersonal. This confirms that the law students are in the right specialization.

The results above could be attributed to the nature of the specializations. For example, engineering deals of mathematical equations, scientific thinking, reasoning, and focusing on scientific concepts as well as acquiring practical skills from different laboratories. That's why we see engineering students excel in logical intelligence.

Table (7):Tests of Between-Subjects Effects

Source of Variance	Dependent Variable	Sum of Squares	Degrees of Freedom	Means of Squares	F Value	Statistical Significant	Partial Eta Squared
Gender	Linguistic	29.075	1	29.075	1.234	.267	.004
	Logical	37.314	1	37.314	1.542	.215	.005
	Spatial	110.538	1	110.538	4.394	.037	.014
	Kinesthetic	24.317	1	24.317	1.186	.277	.004
	Musical	117.992	1	117.992	3.470	.063	.011
	Interpersonal	57.261	1	57.261	2.546	.112	.008

Whereas, the humanities specializations focus on the methodologies, activities, and skills that develop the linguistic, interpersonal, musical intelligences through concentrating on certain strategies such as discussion, dialogue, verbal and written expression, debate, artistic and literary taste. These results are in harmony with the results of several studies such as <sup>(38)</sup>, <sup>(23)</sup>, <sup>(25)</sup>, and <sup>(2)</sup>.

Architecture students excel in kinesthetic intelligence and this could be attributed to the fact that architects feel a sense of movement within their bodies for mass, volume, shape, size, and patterns.

### Discussion Related to Hypothesis Emerged from the Second Question.

The Second question is: What are the differences in the multiple intelligences profiles of DU students according to gender? From this question the following hypothesis emerged: There are no statistically significant differences at ( $\alpha = 0.05$ ) in the multiple intelligences profiles of the DU students attributed to the gender variable.

One-way MANOVA tests the differences between the means of sample score on the eight intelligences is carried out to find out if there are statistically significant differences in each intelligence according to gender variable. Table (6) shows the results:

Table (6):Multivariate Tests

Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	
Gender	Wilks' Lambda	.901	.287	8.000	311.000	.000	.099

Table (6) shows that there is a statistically significant difference in intelligences based on gender,  $F(8, 311) = 4.284, p < .0005$ ; Wilk's  $\Lambda = 0.901$ , partial  $\eta^2 = 0.099$ .

To determine how the intelligence variable differs for the gender variable, we need to look at the Tests of Between-Subjects Effects shown in Table (7):

	Intrapersonal	114.637	1	114.637	6.444	.012	.020
	Naturalist	76.823	1	76.823	3.036	.082	.009

We can see from table (7) that spatial intelligence has a statistically significant effect on gender ( $F(1, 318) = 4.394; p < .05$ ; partial  $\eta^2 = .014$ ). Also, intrapersonal intelligence has a statistically significant effect on gender ( $F(1, 318) = 6.444; p < .05$ ; partial  $\eta^2 = .020$ ).

The table above shows that there are statistically significant differences only in Spatial intelligence and Intrapersonal intelligence, while there are no statistically significant differences on the rest of the intelligences. Table (4) shows that the statistically significant differences on Spatial intelligence and Intrapersonal intelligence are both in favor of females.

This result is partially in agreement with the result of Al- Faouri, Khataybeh, & Al-Sheikh<sup>(5)</sup> study and Loori<sup>(24)</sup> study especially in intrapersonal intelligence which is in favor of females in all mentioned studies. At the same time, the result of the study is in disagreement with the studies of Furnham & Ward<sup>(16)</sup>, Furnham, Tang, Lester, O'Connor, & Montgomery<sup>(17)</sup>, and Weiss, Kemmler, Deisenhammer, Fleischhacker, & Delazer<sup>(37)</sup> which explains that there are statistically significant differences between males and females in all intelligences in favor of males. Also, it is in a disagreement with Farunham & Akande<sup>(18)</sup> study which shows that females perform better than males in all intelligences.

Various self-estimated intelligence studies show that logical reasoning, as well as mathematical and spatial intelligence is considered a masculine sphere, whereas interpersonal and emotional "intelligence" or skills are more often regarded as feminine domains<sup>(30)</sup>. Bennett<sup>(12)</sup> reports that mathematical, spatial, and kinaesthetic intelligences are judged as more masculine, while personal, musical, and verbal intelligences are judged as more feminine. Furnham<sup>(15)</sup> argues that the concept of intelligence is *male normative*, which accounts for the systematic and universal gender differences in self estimates. Other studies show that gender differences favoring males in self-estimated mathematical abilities occur in all cultures as well as in children and early adolescents, despite the fact that there are either no gender differences or else girls outperform boys<sup>(30)</sup>.

### Conclusions and Recommendations

The study reveals that intrapersonal intelligence is the highest and the most common intelligence among Omani students for all specializations. This shows that students have a good ability to understand themselves, goals, strengths and weakness, and

interests. Therefore, they are be able to establish good relations with others in the university, society, and workplace. According to career guidance which is based on multiple intelligences theory, the study found that the students from the specializations: Computer, Mathematics, Languages, Social Sciences, [Accounting and Finance](#) (A&F), [Management and Marketing](#) (M&M), [Management Information Systems](#) (MIS), Engineering, and Law made a good decision about selecting their college programs and consequently their future careers. The study also finds that MI profiles of students from Education and Architecture did not match the intelligence profiles required by each specialization which means that the departments are required to apply special projects and activities to help students develop their intelligences to match the adequate MI profile for each specialization. The students are urgently requested to attend such programs to make sure that they can achieve success in their future career.

In light of the results of this study the researchers recommend the following:

- 1) The advisors of the students in the universities can get benefits from applying the Multiple Intelligences Scale to direct students to the appropriate specialization based on their MI profiles.
- 2) In case the students are weak in an important intelligence for a certain specialization, the department should plan and design activities to develop the desired intelligences.
- 3) Researchers as well as the advisors and career counselors are invited to start a collaborative work to further understand and explore the benefits of using Multiple Intelligences theory as a framework for career counseling.

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# مطابقة الذكاء المهيمن للطلاب مع مجالات تخصصهم: هل اختار الطلاب التخصص الصحيح؟

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## الملخص :

هدفت هذه الدراسة الى التعرف على الفروق في الذكاءات المتعددة لطلاب الجامعة بناءا على متغيرات الجنس والتخصص الأكاديمي، وكذلك التعرف على كيفية استخدام نظرية الذكاءات المتعددة كمؤشر على مدى ملائمة اختيار الطلاب للتخصص الأكاديمي. شارك في الدراسة 320 طالبا وطالبة من مستوى السنة الأولى من مختلف التخصصات في جامعة ظفار . لجمع البيانات تم استخدام تدرج ليكرت الخماسي في مقياس الذكاءات المتعددة. باستخدام تحليل التباين متعدد الإتجاهات (MANOVA) كشفت الدراسة أن الذكاء ضمن الشخصي هو الأكثر شيوعا بين الطلاب والطالبات حيث أنه احتل المركز الأول دائماً. كذلك وجدت الدراسة أن الطلاب من التخصصات التالية : الكمبيوتر، الرياضيات، اللغات، العلوم الإجتماعية، المحاسبة والتمويل، الإدارة والتسويق، نظم إدارة المعلومات، الهندسة والحقوق قد إتخذوا قراراً صحيحاً بشأن اختيار التخصص المناسب. على الجهة المقابلة، وجدت الدراسة أن بروفایل الذكاءات المتعددة للطلاب في تخصصات التربية والهندسة المعمارية لم يتلائم مع بروفایل الذكاءات المتعددة المطلوب لكل تخصص. في ضوء النتائج ، أوصت الدراسة الباحثين والمستشارين المهنيين ببدء عمل تعاوني لزيادة فهم واستكشاف فوائد استخدام نظرية الذكاء المتعدد كإطار للإرشاد المهني.

**الكلمات المفتاحية:** الذكاءات المتعددة، الجنس، طلاب الجامعة، التخصص الأكاديمي.