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Abstract

Learning styles approach reinforces developing the suitable instructional materials for students. Every student has a different yet personalized learning style. The research aims to investigate the learning styles preferences of common first year students at Umm Al-Qura University in Makkah, Kingdom of Saudi Arabia, and it explores if there is a relationship between students' preferred learning styles and their learning motivation.

The VARK (Visual, Auditory, Read/Write, and Kinesthetic) questionnaire was used to investigate learning style preferences. Correlative Descriptive methodology was used to identify the students' learning styles preferences according to the different academic disciplines (Medical, Scientific "Engineering", and Administrative). The research sample consisted of 105 male students selected randomly from the three sections at deanship of common first year. Overall, the results revealed that the preferred learning styles according to VARK questionnaire was Kinesthetic-learning style.

Results revealed that about half of the whole students (63%) preferred the Kinesthetic learning style -(uni-model) - followed by the Read/Write style (23.4%) then the visual style (7.4%), the auditory learning style comes at the end with (6.2%). In terms of remaining of the whole sample, the results revealed that students preferred more than one learning style (mixed-modal).

Regarding the academic-discipline, the preferred learning styles as follow, the medical students' group preferred Kinesthetic-learning style, at the similar, the scientific students' group preferred as well Kinesthetic-learning style, however, the administrative students' group preferred Read/Write learning style.

The results revealed that, there is a significant relationship between learning styles and students' learning motivation. As per, the highest correlation belongs to kinesthetic learning styles, kinesthetic students have more motivation for higher education.

The results also revealed the above those students do not have the same learning styles and experience of learning techniques. The results of this research are expected to determining learning styles of the students that should contribute augmenting the learning process & outcomes in terms of the students' success through delivering appropriate e-learning environment including the suitable activities, instructional media and provide better teaching practice within such learning environments. The research can be contributed to augment learning outcomes at Umm Al-Qura University.

1 Introduction

The rapid development of educational technologies has increased at the last years. Learning content becomes rich and diverse according to personalizing learning activities (Yang, T., et al., 2013). Learning styles in 21st century is predictable to make students to join actively in developing self-understanding as well as their environment awareness. (Saavedra & Opfer, 2012; Nuankaew, et al., 2019). Learners differ in choosing the method that they prefer in their learning, as some learners prefer learning by listening while others prefer practice and application, and it has been reflected due to the rapid and advanced technological revolution on all aspects of life, including the educational learning process, which includes the curriculum, either faculty member and learner (Sobeeh, 2014; Aldosari, et al. 2018; Jaleel, S. & Thomas, A., 2019).

It is important to motivate the learners academically, where the most important responsibilities of the instructor in making students more involved in learning, and even elsewhere that to diagnose and learn the learning styles of learners, which is an approach that knowing the individual differences. Each student's learning style can be presented so that the faculty member can design and present educational activities and appropriate instructional means for students in an adaptive learning environment, and thus help them learn with their preferred learning styles, while encouraging them to differentiate their learning styles (Sung, H., et al., 2012).

Over the last years, learning theories have been evolved, as these theories turned around the idea that learners demonstrate certain learning styles, as they use these styles to absorb and extract information. (Hassan, et al., 2014)

Learning style states to the student's method (s) of collecting, processing, inferring, organizing, and thinking about knowledge. It represents how an individual understand and apply an information that they receive (Griffiths C, & İnceçay G., 2016, Arango, D., et al., 2020). Although many learning styles are articulated based over several psychological paradigms, instructors are concerned in classifying students based on visual, auditory, read/write, and kinesthetic (VARK) learning preferences (Nuzhat, et al., 2011; Mehta & Sager, 2015). Many influences like gender, age, achievement, and thinking styles can affect student-learning styles (Corbin A., 2017).

Several literatures conducted on area of students' learning styles correlated to the higher education that emphasized the status of this matter. For example, Abu Al-Nadi,

(2010) leaded a study aimed at detecting most preferred learning styles amongst students of Jordanian Al-Isra University, and if there a relationship between the most preferred learning style and the type of high school academic level, gender, grade point average (scientific, literary, IT, etc.). The researcher used the Learning Styles Index for "Felder and Solomon", which is of the following styles: (active /contemplative, sensory/intuitive, visual/verbal, sequential/inclusive). The results of the study indicated the highest percentage of the pattern (sensory/intuitive) and then the style (visual/verbal) and the study confirmed the existence of differences in learning styles due to the type of academic-discipline in high school, in addition to the lack of differences in preference for a gender-related learning style.

Common first year Deanship, at Umm Al-Qura University, is an integrated academic program affiliated with the Vice-Presidency for Educational Affairs, at Umm Al-Qura University, it aimed to empowering students with the basic skills necessary to study at the university. The implementation of the Common first year program began at Umm Al-Qura University in 1425 AH, as the program perceived several developments over the last years, and the university set a basic condition for exceeding the program is that the student pass all the courses and obtain a cumulative average of at least 1.75 out of 4. The new programs at the deanship provide students with intensive English language skills, computer skills, and active learning skills, in addition to some specialized courses that determine the student's ability to continue in the program. (Umm Al-Qura University Agency for Educational Affairs, 2020).

The idea of this research initiates from the information deficiency in terms of detecting the learning styles perceived by the students at Umm Al-Qura university particularly in learning skills course.

Accordingly, through researchers' experience as faculty members at the common first year deanship, we noticed that the traditional learning methods of teaching in "learning skills" e-course, that the content is presented to all students in one formula which depend on recalling and understanding the content regardless the diverse of their learning styles.

Regarding teaching the "learning skills" e-course, realizing students' variances has not been investigated at Umm Al-Qura University. Regarding the great benefits to realize the learning style of each student, which has differences in ability with other students. Accomplishing students' learning styles could motivate their learning excitedly (Cole, et al., 2004). Since the significance of students' learning styles and learning motivation in teaching "learning skills" course, so a detailed attention should be given to it. Additionally, it is significant to know, understand, and analyze the learning styles of students to provide them with the appropriate activities and the instructional materials that meet each student learning style, as many previous studies assured that (Jhaish, 2010, Obralic & Akbarov, 2012; Al-Hebaishi, 2012; Nuankaew, et al., 2019). Hence, the need of such research was investigated.

This study hopes to contribute to grasp the preferable learning style of students in addition to the relationship between learning styles and learning motivation among the Common first year students at Umm Al-Qura University. In the current research, it assumes that there is a relationship among students' learning styles, and their learning

motivation in the common first year deanship. This research might demonstrate beneficial to both faculty members and students since it can promote faculty members awareness concerning detecting and classifying the students' learning styles.

In conclusion, this research aims to investigate the preferable learning style of common first year students from different academic disciplines, find out the relationship between learning styles preferences of common first year students and their learning motivation. This research was conducted at Saudi Arabia, at Umm Al-Qura University in the second term of the academic year 2018/2019.

The specific objectives of the present study include:

(1) Investigate the students' learning styles at common first year;

(2) Investigate the differences of students' learning styles at common first year in terms of the Academic-discipline;

(3) Examining the relationship of students' learning styles and their learning motivation.

In order to achieve these research aims; the articulated research questions are:

Q1: What are the preferred learning styles of students at common first year deanship with respect to VARK Questionnaire?

Q2: What are the preferred learning styles of students from different academic disciplines at common first year deanship with respect to VARK Questionnaire?

Q2: What is the relationship between Students' learning styles and their learning motivation?

This paper is structured as follow: The next section presents literature review are provided in subsequent sections respectively, followed by methodology, data analysis, results, discussion of results; and the last section provides conclusion & implications.

2 Literature Review

2.1 Learning Styles

The term "Learning style" refers to the method which the learner receives knowledge, information and experiences, which is the way in which he arranges, organizes, records, symbolizes and merges this information and keeps it in his cognitive source, then retrieves the information and experiences in the way that represents his method of expressing them (Fleming & Bonwell, 2002; Jaleel, S. & Thomas, A., 2019). That is, the learning style is not what the student learns, but how he learns more effectively. Honey & Mumford (2000) defined learning styles term to describe activities, behaviors, and attitudes that determine individuals' preferred learning styles. We can define "Learning Style" Procedurally as: the method that the student uses to acquire knowledge, where each student has his own discrete method of learning (Nuankaew, et al., 2019). The idea of learning style is based on the fact that students are different in the ways of receiving information and their ways of thinking, which necessitates providing activities and appropriate means for each student's learning in order to help him to understand and combine information in his memory and gain experiences and skills (Tai, F., 2013). There are several models of learning styles, including the following: Honey & Mumford Learning Style Model (Honey, &

Mumford, 2000) which describes the behaviors and attitudes that determine students' preferred learning method. The list consists of forty paragraphs distributed equally across four learning styles: active, contemplative, theoretical, and utilitarian.

The other model is called Kolb`s Learning Style Model that is categorized into: convergent or (sensual / contemplative), divergent or (abstract / contemplative), assimilation or (abstract / effective), and adaptive or (sensual / active) (Kanani & Al-Kandari, 2005; Jaleel, S. & Thomas, A., 2019). Study findings of (Singh, L., 2015) revealed that the most preferred learning styles is Visual learning style followed by Auditory learning style, then Tactile, and at the end Kinesthetic learning styles among secondary school students. The study findings showed that students mostly learn through the activities or 'Learning by Doing', and they preferred to learn through visuals. They need to learn by graphics, charts, graphs, films, videos etc. for example they have intellect of visualization, color, pictures, etc. Abd & Abu-Zaina, (2012), conducted a study aimed at investigating the development of mathematical thinking ability among students across grades eight to ten, in addition to the relationship of mathematical thinking to the student's learning style. The number of the study members reached (1148) male and female students, who were chosen from the eighth to tenth grade students in Amman First Education Directorate. The VARK scale was used to reveal students' favorite learning styles. The results of the study revealed a growth in the ability to think mathematically as the student moves from one grade to the next. The results also showed that the students' preferred learning style changes with the difference in the class and showed that the students' performance on the mathematical thinking test was the highest for those with visual style, while those with auditory style had their lowest performance.

Peacock (2001) investigated the relationship between learning styles based on Reid's hypotheses. The results of his study revealed that students preferred Kinesthetic and auditory styles. On the other hand, Al-Shehri, (2018) conducted a study that aimed to reveal the preferred learning styles of high school students and the extent of the variation of these styles according to gender and academic-discipline. The results also showed that there were no statistically significant differences in learning styles due to variable of academic-discipline (scientific/literary). The research concluded with a set of recommendations, including the necessity of helping instructors reveal students' favorite learning styles, and choosing appropriate teaching and learning methods for those styles. Abu Hashem & Kamal, (2001) executed a study to detect the nature of the distinctive learning and thinking methods for students of Taibah University in Medina in the light of their achievement levels and their academic-discipline. The sample consisted of (311) Male and female students of Taibah University, applied a list of learning methods for Colb and McCarthy (2000) and a list of methods. Study of Geche, T. J., (2009) identified the students' learning styles at the high school. In Ethiopia, the study aimed to highlight several issues that limit the use of their representations. "My favorite when learning mathematics is designing mathematics curricula". The study used the survey method through the questionnaire and interviews on a sample of (121) male and (121) female high school students, (30) teachers among them (20) male and

(10) female high school mathematics teachers. The students did not learn based on their preferred learning styles and strategies.

Study of (Lena & Liv, 2002) revealed that training students to be conscious of their learning styles and working to join teaching methods with students 'learning styles have a positive impact. The study indicated that this training affects students' learning and their motivation towards learning. Also that education based on personalized learning styles is an active means to achieve a high degree of academic achievement among students, and their metacognitive processes, their choice of appropriate learning strategies, and provide them with new concepts about their educational capabilities such as the enhancement of academic achievements and experiences, which enhance the effectiveness for the same. Study of (Salem, 2017) aimed to study the effect of interaction between learning styles within the augmented reality environment presented by smart devices, smart phones and cognitive style for special needs at the Faculty of Education, in Northern Border University in Saudi Arabia. The results indicated that there is a positive statistically significant effect at (0.01) considering interaction between the learning styles within the augmented reality environment. It was presented by smart devices and cognitive style on developing cognitive achievement of students of special education teachers at faculty of education, and in reinforcing their attitudes towards the use of e-learning techniques for people with special needs. On the other hand, Al-Bishawi, (2019) aimed to identify the role of school's environment in reinforcing the learning environment among the students of Al-Rabahih mixed elementary School from the point of view of instructors, students and parents. The study presented enhancing class activities to suit the learning styles within the classroom which motivated students to learn and raised their academic level and professional achievement. This leaded to reflect positively on the learning core, because the activities that address the different learning styles, especially when using activities that focused on the multiple styles of intelligence among students and taking into consideration their individual differences. Identification the skill capabilities of the student and raise up the level of independence in learning via activities that accommodate with learning style was taken into consideration. Sintia, I., (2019) clarified that there was significant difference between students involved into cooperative groups that instructions are based on learning styles for compared to the control group based on cooperative groups where instructions were incompatible with learning styles considering students' performance.

In terms of learning styles theories, these theories could have significant inferences for learning environment because student motivation would combine of the interaction of learning activities and the student's learning style. There is motive to think that learners view learning styles theories as generally precise, however, in fact, systematic instructional support for these theories is deficient. Accordingly, attention should be taken into consideration for such theories that might support learning environment. (Willingham, D. T., et al., 2015).

We conclude that learning style is the method used by the student to acquire knowledge, as each student has his own discrete method of learning.

2.2 VARK Learning Model

Psychologists dealt with the concept of learning styles from different views. Several models of learning styles appeared, including: the VARK model which is one of the most famous models used to learn and identify styles of learners' learning. Neil D. Fleming (2006) defined learning style: as the way in which the learner receives knowledge, information and experiences, which is the way in which he organizes and organizes this information and then the way in which student records, symbolizes and merges these information and experiences The way in which he expresses his way. The VARK questionnaire offers better thoughtful about information processing preferences, containing a learner's capability to concurrently use more than a learning style (Johnson M., 2009).

The VARK model by Fleming & Bonwell (2002) consists of four students' favorite learning styles. The letter "V" represents visual and means the visual learning style, while the letter "A" represents the word auditory and indicates the auditory learning style, and the letter "R/W" represents the word "write/read", means the reading/writing learning style, and the letter "K" represents the word "Kinesthetic" and indicates the practical/kinetic learning style. VARK model focuses on perceptual media, which the learner tends to, learn according to different preferences. It focuses on how the brain represents the experience it faces, and the methods of receiving stimuli in order to engage them. In addition to the preferred method that the individual uses in organizing and processing information and experiences is his distinctive method of learn, receive information provided to him from the environment, and his way of solving his problems encountered during learning situations (Fleming & Bonwell, 2002). Learners are categorized according to the VARK model based on their preferences through their responses into four categories representing simple learning styles. Wherever students are classified according to their preferences, and it consists of four favorite learning styles among students, where the word VARK is the first letters of the learning styles, which are visual style, auditory style, and written style (Read / Write), kinesthetic style. (Fleming & Bonwell, 2002). The VARK learning style determines the appropriate and best way to study for a student, as it includes the four main methods through which people learn. The students may prefer one type of learning method, and he may prefer to use all or some of the previous methods. (Sobeeh, 2014).

Several studies were conducted to recognize students' favorite learning styles, (Albaz, 2002) conducted a study aimed at testing the effectiveness of a proposed program in the light of multiple intelligences on the development of natural intelligence, learning styles and academic achievement in the science subject. The study sample consisted of (32) students from fifth grade primary students, the study tools consisted of the cognitive achievement test and the scale of learning styles. The results showed the effectiveness of the proposed program in developing academic achievement and adapting learning styles among fifth-grade students.

A study (Balawi, 2002) identified the preferred learning styles and multiple intelligences among students at Yarmok University. The researcher chose the sample in a random cluster method that consisted of (24) divisions, which included (121) male and female students who represented different levels of education and colleges. A

= 9 =

measure of preferred learning styles was used, and other measure for multiple intelligences. The results indicated that the style of auditory learning ranked first in terms of preference among the sample members, followed by the tactile and visual learning method. The results showed that the student's gender, academic level, academic-discipline and multiple intelligences explain a large part of the variation in students 'favorite learning styles, with varying proportions across the discrimination equations for each of the learning styles used as well. Study of Talafhah, & Zaghoul (2009) aimed at revealing the prevailing learning styles among the students of Mutah University and the extent of the variation of these styles according to gender and academic discipline. (190) of scientific disciplines by (220) males and (270) females. The Torrance Scale was applied to the study personnel and his colleagues known as "your learning style & thinking", the results found that there are no significant differences. Statistics ($\alpha = 0,00$) in the prevalence rates of the three types among the sample members according to the gender variable, while such differences appeared at the level of academic-discipline and in favor of students of literary specialties. Al-Balawi, (2014) performed a study aimed at identifying the learning styles used by students of the masters in giftedness and creativity program at Princess Alia University College in Jordan. The researcher examined the relationship of those styles with gender variables and their academic discipline at the undergraduate level, a questionnaire was applied by the researcher to measure learning styles according to the VARK model, and the results caused in the dominance of the auditory style.

2.3 Learning Motivation

Regarding, motives of learning, the success also learning styles relies not only on design and instructional materials but also on the capability to motivate students (Organero & Kloos, 2007). Motivation represents the main means to stimulate the interest of the learners. It pushes them toward the practice of aspects of the activities required via the educational situation. Thus, achievement motivation attains the knowledge, attitudes and skills desired (Rheinberg, & Engeser, 2010). Motivation is an abstract concept, used to describe behavior. It is used to indicate the reasons for activities, wishes, wants, etc. Motivations are assumed paradigms, used to clarify why people do what they do. There is a need for the students' motivation to learn, where the students receive the e-learning and they have goals to continue to study courses in electronic method (Tohidi & Jabbari, 2012; El-Seoud, et al., 2014).

Achievement Motivation plays a crucial role in e-learning to improve the learning process. (Hardre & Reeve 2003); (Cheng & Yeh, 2009). This means that the motivation to learn is; what makes us continue the integration of students in the learning process (Zayed, 2003) & (Anthony & Weide, 2015). Sung, H., (2012) assured that the students' learning motivation who learn according their learning styles is significantly higher than those who learn without depending on learning styles tactic. Additionally, suggesting that appropriate design of computer game based on learning styles was very supportive for students in reinforcing their learning motivation and performance. Adaptive learning environments based on the learning styles can stimulate students' learning motivation (Shih et al., 2013). Hence, the researchers believe that an important

motivation in the learning process, it is vital to the success of any educational situation where it should be included in the design of educational materials, learning motivation of the most important factors that help to acquire knowledge and skills. Education also be effective when the individual's motivation and willingness to learn, so education should be designed in a way that raises motivation and thinking.

In conclusion, the literature related to learning styles and learning motivation is not unresolved topics, either theoretical or practical. In the frame of new research, the suggestions to align between learning styles, learning motivation, it can be realized that there is a strong relationship between them, and they have an outstanding effect on each other. The literature review explored also learning styles and further variables such as gender, culture, age and teaching styles. It seemed from the literature review that there was limited research finalized to link between both learning styles, and the learning motivation, especially in common first year deanships at Saudi Arabia.

Hence, the current research varies from the other studies regarding the research investigation, first: the current research aims to explore the learning styles preferences for students, second: the research aims to investigates the learning styles preferences according to different academic disciplines, third, the current research aims to explore if there is a relationship between learning styles, and learning motivation among common first year students at Umm Al-Qura University.

3 Methodology

3.1 Research Sample

The research sample selected randomly from the population of Common First Year Students at Umm Al-Qura University in Makkah campus, from male section. the whole research population at university consisted of 1670 students. Three different sections represented the research sample from three academic-disciplines as follow (medical section consisted of 54 students, while the scientific section consisted of 25 students, and the administrative section included 26 students), consequently, the total research sample consisted of 105 males' students with reference to whole research population numbers from males students campus at Makkah.

The research sample was chosen in the academic year 2018-2019 at the second term, the second semester. A total of 105 students joined in the current research. The distribution of students' sample was shown in table 1.

Table 1.   The distribution of students' sample

Academic discipline	Sample	Percent (%)
Medical	54	51
Scientific	25	24
Administrative	26	25
Total	105	100

= 11 =

As shown in the previous table, 105 students were divided into three groups according to the academic discipline. In responding to the questionnaire, the students were required to submit each one.

3.2   Research Procedures

In current research, the researchers collected the data via two questionnaires, first one designed to identify students' learning style preferences, and the other questionnaire designed to investigate students' learning motivation.

Both electronic questionnaires were designed through Google forms via following links, the first is (https://forms.gle/cJGM8sgcazKnFwX27), the other link is, (https://forms.gle/8MQo1ejYMXNYmvcj8), next, the link was sent to the research sample to facilitate their respond and to calculate data statically in easy way. Each of the three academic-disciplines students (Medical, Scientific, Administrative), which participating in the research experiment has been divided into three groups. Later, the three groups' members were added on WhatsApp groups for each academic discipline. The links of the both questionnaires were sent to all these groups, all of whom have completed their role individually to answer the questionnaire. Students were notified with the objectives of the VARK questionnaire in terms of measuring their learning style preferences, the students were also informed that the findings would only be utilized for only research purposes, while the learning motivation questionnaire was considered to measure the degree of learning motivation.

The necessary statistics have been made to respond to these students on the VARK questionnaire. Regarding learning motivation, it was also measured by requesting students to state their opinion on the learning motivation questionnaire electronically.

اسم المقرر ورمزه: مهارات التعلم /3- 4800104 اسم البرنامج (القسم): برنامج السنة الأولى المشتركة. الفصل الدراسي الثاني: العام الجامعي: 1440/1439هـ.

أعزائي طلبة عمادة السنة الأولى المشتركة، يمكنكم من خلال الاستبيان التالي التعرف على نمط التعلم الخاص بكم. يرجى قراءة كل عبارة بعناية والتعبير عن موقفكم تجاهها وذلك بالاختيار من البدائل الأربعة التي تلي كل عبارة. نأمل منكم تعبئتها بكل دقة وتجرد. علما بأن جميع الاختيارات والإجابات التي ستدلون بها لن تستخدم إلا لغرض البحث العلمي فقط. وإننا إذ نشكركم على تعاونكم واستجاباتكم، نرجو لكم كل التميز، وفقكم الله. الباحتان: د. حسن عبدالعزيز الصباغ haelsabag@uqu.edu.sa • د. عماد حامد أمين حامد ehamed@uqu.edu.sa أخي الطالب: اختر الإجابة التي تشرح اختيارك الأفضل. يجب اختيار الإجابة التي تطابق إدراكك الحسي .. يمكنك اختيار أكثر من إجابة . . علما بأنه لا توجد أسئلة صحيحة وأخرى خاطئة .. أترك السؤال الذي لا ينطبق عليك دون إجابة. وعقب تمام الإجابات أنقر على أيقونة "عرض مدى الدقة" لتتعرف على نمط تعلمك المفضل:

Fig. 1. The main interface of VARK Questionnaire

3.3 Research Instruments

3.3.1 VARK questionnaire

The VARK questionnaire that developed by Neil Fleming was used in this research. Learning Style Inventory (VARK) aims to measure individual's ability in learning style. In order to identify students' learning styles, a set of 16 items with multiple choice alternatives were given via the questionnaire. VARK version 8.1 through the VARK website (http://www.vark-learn.com) was the foundation. The Arabic version of the VARK questionnaire was designed electronically by the researchers through Googleforms as explained in the following link:

(https://forms.gle/cJGM8sgcazKnFwX27). The link was sent to the sample to facilitate their respond and to calculate data statically in easy way. The VARK questionnaire was nominated, since it is consistent, brief, and easy to fill in from students. It has been used widely among higher education students in several studies as well. The following figures show screenshot of the electronic questionnaire and students answers. Validity was assured through the literature review and a critical review of the questionnaire and more reliability of results also was provided.
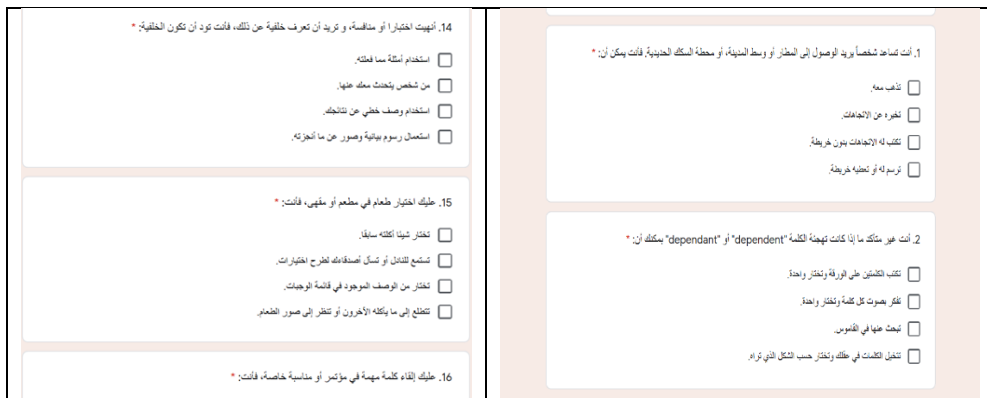
Fig. 2. Screenshots of the VARK questionnaire

Fig. 3. Screenshot of the student respond

In order to calculate reliability and validity of learning styles questionnaire. The researchers selected a pilot sample consisted of 20 students to take part in testing the reliability of the questionnaire, Alpha coefficient was used to calculate the reliability of the questionnaire as revealed in the following table (2).

Table 2. Alpha Cronbach Coefficient

VARK Domains	Alpha Cronbach
Visual	0.841
Auditory	0.783
R/W	0.790
Kentenstic	0.862
Total	0.823

= **14** =

The results of table (2) showed that the reliability for whole learning styles questionnaire was 0.82, thus, it indicated that the questionnaire was appropriate for proceeding such research.

On the other hand, the internal validity coefficient was computed by using Pearson coefficient. There was a relation correlation between the domains and the total degree and each domain with the other domains (r=0.76) at sig. at level (0.01) that presented a high internal consistency of the VARK learning style questionnaire which ensure the validity of the questionnaire.

3.3.2 Learning Motivation questionnaire

To measure the students' motivation, the researchers designed learning motivational questionnaire electronically through Google forms as explained in the following link (https://forms.gle/8MQo1ejYMXNYmvcj8). The questionnaire consisting of 23 items with multiple choice alternatives were given in the form of a five-point Likert scale. The alternatives were five as follow: strongly agree, and do not decided, disagree, and strongly disagree.

The questionnaire was designed based on the related literature review (Rabie, 2011; Tai, 2013, Chumbley, et al., 2015) and the results of a pilot study. Some items were taken with a few modifications from the whole questionnaire. The content validity of the questionnaire was recognized based on the reviewing judgment of specialists and experts through items check. The researchers used factor analysis to achieve satisfactory internal validity. The questionnaire was piloted through 20 students at Umm Al-Qura University before it was directed to the research sample. The reliability factor was acceptable for the complete questionnaire, the reliability for whole learning styles questionnaire according to alpha Cronbach was 0.78 as shown in table 3., thus, that results indicated that the questionnaire was fitting for proceeding such research.

Table 3. Alpha Cronbach Coefficient

Learning Motivation questionnaire	Alpha Cronbach
Total	0.782

= 15 =

Fig. 4. Screenshots of the learning motivation questionnaire

On the other hand, the internal validity coefficient was computed by using Pearson coefficient. The correlation coefficient was valued as (r = 0.71). It was significant at level (0.01), thus it referred to a high internal consistency of the learning motivation scale which ensured the questionnaire validity.

4   Data analysis

The information included demographic details, such as, academic disciplines (Medical, Scientific, and Administrative), grades (percentage) they obtained in at "learning skills" course.
Data were further compiled and analysed using (SPSS 22.0) and Microsoft Excel. Descriptive data were used to describe learners' styles.

Scoring Chart

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

Fig. 5 Screenshot of Scoring Chart

In current research used the Pearson correlation to investigate if there is a significant relationship between students' learning styles and their learning motivation.

5   Results

5.1   Detection of students' learning styles Preference of Common first year Students

The following tables show the obtained results of VARK Questionnaire.

Table 4. Descriptive statistics results on learning styles of the groups (The Whole Group) Uni-Model (1 Learning Styles)

Learning Style	N =81	Percentage %	Percentage to the whole sample %
Kinesthetic	51	63	48.6
Visual	6	7.4	5.7
Auditory	5	6.2	4.8
R/W	19	23.4	18.1

According to results displayed at table 2, Results revealed that about half of the whole students (63%) preferred the Kinesthetic learning style -(uni-model) - followed by the Read/Write style (23.4%) then the visual style (7.4%), the auditory learning style comes at the end with (6.2%).

Table 5.   The Descriptive statistics results on learning styles of the groups (The whole Group) Mixed-Model (more than One Learning Style)

Learning Style	N =24	Percentage	Percentage to the whole sample %
V + K	3	12.5	2.9
V+R	1	4.2	0.9
A+K	10	41.6	9.5
R+K	2	8.3	1.9
V+A+K	3	12.5	2.9
V+ R + K	2	8.3	1.9
A+ R + K	1	4.2	0.9
V+R+A	1	4.2	0.9
V+A+R+K	1	4.2	0.9

In terms of remaining of the whole students, the table 3 revealed that students who preferred more than one learning style (mixed-modal), about 42% selected two learning styles (bimodal) " Kinesthetic + Auditory", also 12.5% preferred the "Visual+ Kinesthetic ", while 12.5% preferred chose three learning styles (tri-modal) " Kinesthetic + Visual+ Auditory", and 4.2% chose learning styles (quad-modal) " Kinesthetic + Visual+ Auditory and Read/Write".
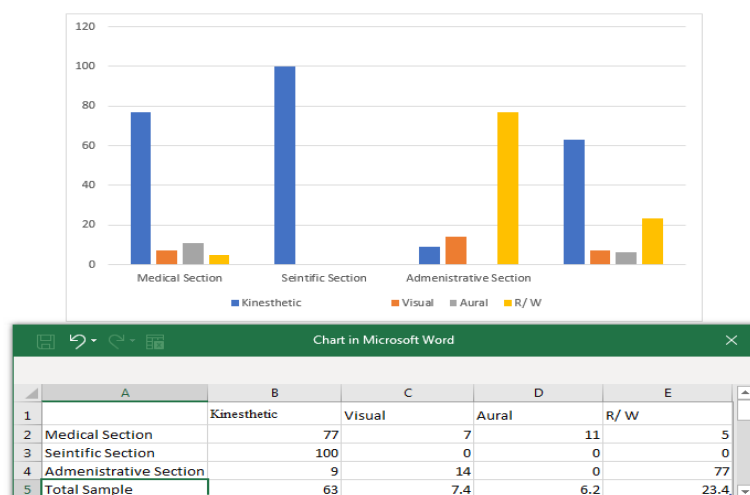
Fig. 6. The distribution of the students' learning styles according to the academic discipline (percentage of uni-model %)

As revealed in Fig.3, the X axis indicated the items of academic disciplines, while the Y axis represented the percentage of students of uni-model.

Table 6. The Descriptive statistics results on learning styles of the groups (Medical Group, no.54) Uni-Model (One Learning Style)

Learning Style	N=43	Percentage %	Percentage to the whole sample %
Kinesthetic	33	77	61
Visual	3	7	5.6
Auditory	5	11	9.3
R/W	2	5	3.7

According to results displayed at table 4, Results revealed that about half of the medical group students (77%) preferred the Kinesthetic learning style - (uni-modal) - the Auditory learning style (11 %) was the next, the Visual style (7%) was the third, and the Read/Write learning style comes at the end with (5%).

Table 7. The Descriptive statistics of the results on learning style of the groups (Medical Group) Mixed-Model (More than one Learning Style)

Learning Style	N =11	Percentage %	Percentage to the whole sample %
V + K	3	27.4	5.6
A+K	5	45.5	9.3
R+K	1	9	1.9

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V+A+K	1	9	1.9
V+R+K	1	9	1.9

Regarding the rest of the medical group students, the table 5. revealed that students who preferred more than one style (mixed-modal), about 45.5% chose two learning styles (bimodal) " Kinesthetic + Auditory", also 27.4% preferred the "Visual+ Kinaesthetic", while 9% preferred chose three learning styles (tri-modal) "Kinesthetic + Visual+ Auditory", and 9% preferred chose three learning styles (tri-modal) " Kinesthetic + Visual+ Read/Write".

Table 8.   The Descriptive statistics results on learning styles of the groups (Scientific Group, no.25) Uni-Model (One Learning Style)

Learning Style	N =16	Percentage %	Percentage to the whole sample %
Kinesthetic	16	100	64
Visual	0	0	0
Auditory	0	0	0
R/W	0	0	0

According to results displayed at table 6, Results revealed that about half of the scientific group students (100%) preferred the Kinesthetic learning style -(uni-modal) - followed by the Read/Write style.

Table 9.   The Descriptive statistics results on learning styles of the groups (Scientific Group) Mixed-Model (more than one Learning Style)

Learning Style	N =9	Percentage %	Percentage to the whole sample %
K + R	1	11.11	4
A+K	5	55.56	20
V+K + A	2	22.22	8
V+R+K	1	11.11	4

Regarding the rest of the scientific group students, the table 7. revealed that students who preferred more than one style (mixed-modal), about 55.56% chose two learning styles (bimodal) " Kinesthetic + Auditory", also 11.11% preferred the " Read/Write + Kinesthetic ", while 22.22% preferred chose three learning styles (tri-modal) "Kinesthetic + Visual+ Auditory", and 11.11% chose learning styles (tri-modal) " Kinesthetic + Visual + Read/Write".

Table 10. The Descriptive statistics results on learning styles of the groups (Adminstrative Group, no.22) Uni-Model (one Learning Style)

Learning Style	N =22	Percentage %	Percentage to the whole sample %
Kinesthetic	2	09.09	7.8
Visual	3	13.63	11.7
Auditory	0	0.0	0.0
R/W	17	77.27	65

According to results displayed at table 8, Results revealed that more than half of the administrative group students (77.27%) preferred the Read/Write learning style -(uni-modal) - followed by the visual learning style (13.63%) then the Kinesthetic learning style (9.09%), the Auditory learning style comes at the end with (0%).

Table 11. The Descriptive statistics results on learning styles of the groups (Adminstrative Group) Mixed-Model (more than one Learning Style)

Learning Style	N = 4	Percentage %	Percentage to the whole sample %
V + R	1	25	3.9
V+R + A	1	25	3.9
R+A+K	1	25	3.9
V+R + A + K	1	25	3.9

Regarding, the rest of the administrative group students, the table 9. revealed that students who preferred more than one style (mixed-modal), about 25% selected two learning styles (bi-modal) "Read + Kinesthetic ", also 25% preferred the "Auditory + Kinesthetic ", while 25% preferred chose three learning styles (tri-modal) "Kinesthetic + Visual+ Auditory", and 25% chose learning styles (quad-modal) " Kinesthetic + Visual+ Auditory + Read/Write".

5.2 Relationship between Preferred Learning Style and Motivation of students at Common First Year

Pearson correlation was used to examine the relationship. There were significant relationships between Kinesthetic, Auditory, Visual, and Read/Write learning styles and their motivation in learning "learning skills course" as the Table 10.

Table 12. Correlations of Preferred Learning Style and Motivation Learning Style Motivation

Learning Style	Motivation	
	Pearson	Sig.

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Kinesthetic	0.328 (**)	0.000
Visual	0.123 (*)	0.021
Auditory	0.213 (**)	0.002
R/W	0.240 (**)	0.001

** Correlation significant at 0.01.

Table 11. Showed that the correlation was statistically significant at the 0.01 level. The researchers used regression analysis in this research question to explore further in the effect between learning style and motivation as follow in the next table.

Table 13. Regression Analysis of Preferred Learning Style and Motivation

Learning Style	Standardized Coefficients β	t	Sig	Collinearity Statistics: VIF	Adjusted R Square	F
Kinesthetic	0.328	4.659	0.000**	1.000	0.328	26.243
Visual	0.123	1.687	0.034*	1.001		
Auditory	0.011	0.149	0.011*	1.232		
R/W	0.036	0.421	0.032*	1.035		

** Correlation was statistically significant at the 0.01 level.

Students' Kinesthetic, auditory, visual and r/w learning styles had 32.8% effect possibility on motivation shown as Table 11. Sig. = .000 ~ Sig.= .032 The value of VIF was reasonable within the limitation (< 2). The results from the Table 10, and 11 through Correlations and Regression were shown partly significant.

6 Discussion

Knowledge acquisition of student learning style is very significant as it supports each student to be more fruitful and creative, and to improve performance and problem-solving skills, to be able to make better decisions, and thus to learn effectively, hence, it is important to increase the students' competences to use as many learning styles as possible so that they can succeed in all learning situations. (Jaleel, S. & Thomas, A., 2019).

This paper explored the learning style preferences among common first year students according to their diverse academic-disciplines, at common first year deanship, Umm Al-Qura University. Other research objective was to validate the correlation between the students' learning style preferences and their learning motivation.

This research aims to contribute to the development of Common First Year education in KSA. The effect of VARK model in teaching "learning skills" course can be realized from the results as follow: most students preferred to learn using Kinesthetic-learning style. Results revealed that about half of the whole students (63%) preferred the

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Kinesthetic learning style - (uni-model) - followed by the Read/Write style (23.4%) then the visual style (7.4%), the auditory learning style comes at the end with (6.2%).

Overall, the results revealed that the preferred learning styles according to VARK questionnaire was Kinesthetic-learning style. On the other hand, students who preferred to use more than one learning style (mixed-modal) as follow: about 42% selected two learning styles (bi-modal) " Kinesthetic & Auditory", also 12.5% preferred the "Visual & Kinesthetic ", while 12.5% preferred chose three learning styles (tri-modal) " Kinesthetic & Visual & Auditory", and 4.2% chose learning styles (quad-modal) "Kinesthetic & Visual & Auditory & Read/Write".

Regarding the various academic-disciplines of students, the preferred learning styles as follow, The preferred learning style for medical students' group was kinesthetic style, also, the preferred learning style for scientific students' group was Kinesthetic style, however, The preferred learning style for administrative students' group was Read/Write learning style. This implied that the medical and scientific students' groups were likely to do and practice while the administrative students' group were likely to think and write.

  The results above also revealed that the students do not have the same learning styles and experience of learning techniques. This may determine the style of learning the common first-year students in the acquisition of many advantages when studying in the first university level.

  However, to the best of our knowledge, there is a limitation in the existing literature to address the current learning styles and efficiency of adopting learning styles into the common first year curricula at UQU. Thus, the primary objective of the research was to determine the existing learning styles of common first year students as variables as described next.

   The probable limitations of current research were limited to common first year students at Umm Al-Qura University in addition to the sample size that consisted of (105 students). The last limitation was usage of VARK questionnaire.

According to the previous results, the highest correlation belongs to Kinesthetic learning styles that students who preferred "Kinesthetic" learning styles have more motivation for higher education. This is because of students' desire, which prefer a physical and hands-on approach. The best practice is fundamental of the learning process. (El-Seoud, S.; et al., 2014).

In terms of the previous research, Al-Hebaishi, S. (2012); Griffiths C, & İnceçay G., (2016); Al-Bishawi, Zain (2019); Arango, D., et al., (2020) stated the importance of identifying the learning styles to the support the learning environment through the suitable activities and the instructional media. Regarding the preferred learning style, Ried (1995) assured that students who preferred "Kinesthetic" learning style over other learning styles, so they could lean more through the learning activities. In this study, the relationship between learning styles of students and their learning motivation was examined as well.

Results of the research revealed that Umm Al-Qura University students shared in this study had high learning motivation. In the frame of the previous studies, results of study Nur Hardiana & Suyata, (2018) showed that VARK model is more real than

conventional model in witting learning. However, study of Ghaedi and Jam (2014) dealt with relationship between Learning styles and Motivation. The results of current research are consistent with the main theories and with last studies relating motivation with learning styles as important analysts of motivations (Olives et al., 2016).

The need of using learning approaches and theories that are compatible with each learning style of the student. This aptitude of determination learning styles can contribute directing the students of the Common first year at Umm Al-Qura University, for selecting and designing the learning activities and materials that suit their academic disciplines to be well-matched with the appropriate learning style for each student. In conclusion, learning styles are a mainly good foundation for designing and developing instructional materials that associate with learning theories.

7   Conclusion and Implications

The following conclusions are based upon the data and the results from the previous statistical analyses. Of the four learning styles, Kinesthetic learning style was perceived by respondents as being the most preferred, whereas Visual, Auditory, R/W learning styles were perceived as the minimum preferred. There were significant relationships between Kinesthetic, auditory, visual, and R/W learning style and motivation in learning "learning skills" course. Students' Kinesthetic, auditory, visual and R/W learning styles had 32.8% effect possibility on motivation in "learning skills" course teaching.

Based on above findings, the current research had assumed to establish the importance of learning styles preferences and motivation as interrelated influences that pay to the process of learning. Most students in administrative group prefer reading (texts) as a foundation of acquiring learning skills, while the other students selected visual, auditory learning styles.

Accordingly, students have some activities that engage them based on their learning styles, and they are prospective to be effective in these activities.

In conclusion, this research, contributed to the enhancement of the "learning skills" course teaching/learning. However, research remains open to any more development that would deal with other variables. Using VARK questionnaire to detect preferred learning styles of students is a significant tactic, which can be used to augment the teaching and learning process quality.   Self-awareness of own learning styles lead each student to select appropriate instructional materials independently.

Identifying learners' styles will help faculty members in analyzing each student learning style to provide the suitable learning activities. Students' preferences let improving learning activities with reflection of the students' points of views and capabilities. Through our experience of teaching, the researchers find appropriate direction, which might guide students towards effective acquisition of skills and positive transfer of the knowledge. We also try to investigate how individual differences affect an individual learner's response to the task of learning and whether individual factors contribute to the rate of skills acquisition.

The results of this study are expected to determining learning styles of the students that should contribute augmenting the learning process & outcomes in terms of the students' success through delivering appropriate e-learning environment including the suitable activities, instructional media and provide better teaching practice within such environment.

The implication of the research results is:

In order to achieve the objective of learning skills acquisition at common first year students at university, the faculty members should pay attention to features related to students' learning styles and learning motivation. Faculty members also should pay attention and stimulate students' motivation. Based on their learning styles, students have preference in "learning skills" course that make them enjoy learning within e-learning platform. Students with their preferred learning styles look to adore learning by engaging in providing e-learning environment with varied instructional materials such as references, digital media, videos, podcast, and open educational resources. In additional to accommodate with varied learning strategies that suit each student learning style such as storytelling, simulation, animation, problem solving, games,.etc. Learning styles are reflected one of the commonly assumed issues in current research and studies as a reference for adapting e-learning content and asynchronous environments.

In conclusion, learning styles are a mainly good foundation for designing and developing instructional materials that associate with learning theories. Further directions of the research findings can lead to set basis for designing adaptive e-courses according to learning styles of students and directing more future research on learning styles in different university colleges.

8 Acknowledgements:

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العلاقة بين أنماط التعلم والدافعية للتعلم لدى طلاب جامعة أم القرى

إعداد

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الكلمات الرئيسية:

أنماط التعلم، الدافعية للتعلم، بيئة التعلم، استبيان فارك، عمادة السنة الأولى المشتركة.

مستخلص البحث:

تنعكس أهمية دراسة أنماط التعلم لدى الطلبة كواحدة من القضايا المهمة والأساسية في البحوث الحالية كمرجع لتصميم تعلم رقمي تكيفي ضمن بيئات التعلم غير المتزامنة.

يهدف البحث الحالي إلى دراسة تفضيلات أنماط التعلم واستقصائها لدى طلاب السنة الأولى المشتركة في جامعة أم القرى بمكة المكرمة، المملكة العربية السعودية، كما يهدف الى استكشاف ما إذا كانت هناك علاقة بين أنماط التعلم المفضلة لدى الطلاب ودافعيتهم للتعلم.

تم استخدام المنهج الوصفي الارتباطي لتحديد تفضيلات أنماط التعلم لدى الطلاب وفقًا لتخصصات الطلبة الأكاديمية التالية (الطبية والإدارية والعلمية "الهندسي")، هذا وقد تكونت عينة البحث من 105 طالب تم اختيارهم عشوائياً من التخصصات الثلاثة بعمادة السنة الأولى المشتركة.

بشكل عام، أظهرت نتائج تقصي أنماط التعلم المفضلة وفقاً لاستبيان VARK أن: نمط التعلم الحركي هو المفضل لدى الطلاب، كما أظهرت النتائج أن حوالي نصف الطلاب (63 %) فضلوا نمط التعلم "الحركي" – (uni-model) - متبوعًا بنمط التعلم "القراءة/ الكتابة" (23.4 %)، ثم نمط التعلم "البصري" (7.4 %)، ويأتي نمط التعلم "السمعي" في الأخير بنسبة (6.2 %). أما فيما يتعلق بالتخصص الأكاديمي، وأساليب التعلم المفضلة فقد كانت على النحو التالى: فضلت مجموعة طلاب التخصص الطبي نمط التعلم الحركي، وأيضا فضلت مجموعة طلاب التخصص العلمي "الهندسي" كذلك نمط التعلم الحركي، بينما كان تفضيل مجموعة طلاب التخصص الإداري هو نمط التعلم "القراءة /الكتابة".

كما أوضحت النتائج وجود علاقة ذات دلالة إحصائية بين أنماط التعلم والدافعية للتعلم لدى الطلاب، حيث أن أعلى ارتباط يرجع إلى ذوي نمط التعلم الحركي، ولدى هؤلاء الطلاب المزيد من الدافعية للتعلم.

من المتوقع أن تساهم نتائج البحث الحالي في أهمية التحديد والكشف عن أنماط التعلم للطلاب، كأساس مستقبلي لتعزيز عملية التعلم وتحسين نتائج الطلاب ودافعيتهم من خلال توفير بيئة تعلم إلكتروني تكيفية مناسبة بما في ذلك اختيار وتحديد الأنشطة المناسبة والمواد التعليمية الرقمية بغرض توفير ممارسات تعليمية أفضل داخل بيئة التعلم وفقاً لأنماط تعلم الطلاب.