# Students Satisfaction with Blended Learning and their Learning Style in Relation to Academic Achievement at Faculty of Nursing in Suez Canal University

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## Abstract

**Background:** Blended learning was explained as a learning approach that combines between different delivery methods and styles of learning. Learning styles, personality traits, intellectual ability and satisfaction are found to be the main factors that impact the academic achievement of students. **Aim of the study:** It aimed at assess students satisfaction with blended learning and their learning style in relation to academic achievement at Faculty of Nursing in Suez Canal University. **Subjects and methods:** A correlational descriptive design was conducted at the Faculty of Nursing in Suez Canal University. Sample included 304 nursing students from the third and fourth academic years. Self-instruction tools were used for data collection namely; student satisfaction with blended learning scale and grasha - riechmann student learning styles scale, beside to the students' academic achievement sheets. **Results**: The highest percentage of nursing students recorded a moderate level of satisfaction with blended learning (65.1%) compared to high level of satisfaction (16.4%). Independent learning style recorded the highest mean score (37.48±4.33) compared to avoidant learning style (32.69±5.14). Besides, it was found that the highest percentage of nursing recorded excellent level (47.7%) compared to acceptable level (3%). **Conclusion**: There was a significant positive correlation between total students satisfaction with blended learning and all learning styles except dependent style, compared to academic achievement which had no significant correlation. **Recommendations:** Holding training courses for all students and educators to train them on best practices during applying blended learning strategies, and energizing active participation of students during practicing blended learning activities are recommended.

***Keywords*:** Academic achievement, Blended learning, Learning style, Students satisfaction.

## 1. Introduction

Blended learning is recognized as a highly valuable educational approach, offering important advantages and outcomes including student satisfaction, achievement, engagement, participation, and motivation **(Huang, 2021)**. It became a needed strategy during COVID 19 and continued to approach

in higher education as a result of prevalence of information technology **(Luka, 2023).**

Effectiveness of blended learning is being assessed through satisfaction of its users **(Stanislaus, 2021).** The definition of blended learning was given as an approach to learning that integrates several modes of instruction and delivery. Students' academic achievement is determined to be primarily influenced by their learning styles, personality qualities, intellectual capacity, and level of satisfaction **(Tong, Uyen, & Ngan, 2022).** It's critical to comprehend how students learn and how that affects their academic performance. Administrators can ensure the successful implementation of blended learning by taking into consideration that student satisfaction with the program is the primary factor for program implementation. They should also be aware that low student satisfaction is the primary reason for program failure when it comes to blended learning implementation **(Alshehri, 2017).** The degree to which students have enjoyed their education is commonly seen as a measure of satisfaction **(Fisher, Perényi & Birdthistle, 2018).** Everybody has a different manner of learning due to their varied educational and cultural backgrounds, personalities, and learning experiences. This results in varying degrees of success; the various favored methods are collectively referred to as "learning styles" **(Chen, 2023).**

It is important to take into account how different students learn, as this has a significant impact on how effective blended learning is. Accomplishment and learning effectiveness can be improved by identifying and comprehending students' learning style **(Venkatesh, Rao, K., Nagaraja, Woolley, .Alele, & Malau, 2020)**

A student's ablity to succeed academically depends not just on their innate learning patterns but also on their level of intellect **(Shamsuddin & Kaur, 2020)**. Understanding a student's or teacher's learning style is crucial, as learning styles impact academic accomplishment **(Alsalhi, Eltahir, & Al-Qatawneh, 2019).** One of the most crucial factors in predicting a learner's future academic status is their academic achievement **(Dryer, Henning, Tyson, & Shaw, 2016)**.

By adapting educational material to each student's unique learning style, college students' academic attainment could be increased **(Rogowsky, Calhoun, & Tallal,**

**2020)**. Stated differently, given that every individual has a unique learning style, tailoring academic resources to these variances will promote learning and, thus, enhance their academic achievement **(Akbarov et al., 2018)**. In terms of students' academic performance in educational institutions, blended learning has been determined to be more effective than traditional learning.

**Significance of the Study:**

Blended learning is recognized as a highly valuable educational approach, offering important advantages and outcomes such as student satisfaction, achievement, engagement, participation, and motivation **(Luka, 2023)**. One key factor that influences the effectiveness of blended learning is students' learning styles, which should be taken into consideration **(Venkatesh et al., 2020)**. Students have differences in their learning styles; determining and understanding students' learning styles is quite valuable in order to achieve more effective learning and enhance academic achievement **(Kassem, Abo Habieb, & El-Bastwese, 2020)**. Hence, studying the relationship between nursing students' satisfaction with blended learning, their learning style, and academic achievement holds significant importance.

**The aim of the study:**

The Aim of the study is to assess students satisfaction with blended learning and their learning style in relation to academic achievement at Faculty of Nursing in Suez Canal University.

**Objectives of the study:**

- Assess level of satisfaction with blended learning among students at Faculty of Nursing.
- Determine learning styles for the students at Faculty of Nursing.
- Assess academic achievement among students at Faculty of Nursing.
- Determine relationship between nursing students' satisfaction with blended learning, learning style and their academic achievement.

**Research question:**

- What are the levels of satisfaction to blended learning among students at Faculty of Nursing?
- What are the dominant learning styles for students at Faculty of Nursing?
- What are the levels for academic achievement among students at

Faculty of Nursing?

- Is there a relationship between nursing students satisfaction with blended learning , their learning style and academic achievement?

## 2. Subject and Methods

**Study design:**

A correlational descriptive design was used to conduct this study.

**Study setting:**

This study was conducted at Faculty of Nursing, Suez Canal University. The Faculty of Nursing in Ismailia had been established in 2006 under Presidential decree No. 267 of 2006. It adopts new and innovative educational approaches. It follows Problem Based Learning (PBL) strategy in addition to Community-Oriented and Community-Based Education.

**Study subjects**:

The study was conducted on 304 students from target population (395) including third and fourth academic years as they studied with blended learning along three academic terms.

**Tools of data collection:**

***Tool (1): Student satisfaction with blended learning scale (SSBLS)***: the questionnaire compromised two parts as the following:

**Part 1:** Personal characteristics and the medium of blended learning: this part concerned with the studied students ' personal data such as; students name, gender, age, academic year and residence. Whereas the medium of blended learning included type of device used in learning process, daily hours on the internet to complete learning activities, days a week on the internet to complete learning activities, and training courses / workshops on e-learning.

**Part 2: Student satisfaction with blended learning scale (SSBLS)**. It was designed by **Mirabolghasemi, Shasti, and Hosseinikhah Choshaly (2021) based on three questionnaires** for determining the levels of student satisfaction with blended learning. It consisted of 6 categories**:** Social presence (9 items), cognitive presence (12 items) and teaching presence (13 items ) for the first questionnaire **(Swan, Shea, Richardson, Ice, Garrison, Cleveland-Innes & Arbaugh, 2008);** system quality (5 items) and information quality (5 items) for the second

questionnaire (**Freeze, Alshare, Lane & Wen, 2010);** global satisfaction (3 items ) for the third questionnaire (**Freeze, etal 2010; Diep, Zhu, Struyven, & Blieck, 2017).** The back translation was done by researcher.

**Scoring system:**

A five-point likert scale was used with responses of strongly disagree (1), disagree (2), Neither disagree or agree (3), agree (4), and strongly agree (5). The score of items were summed up and the total was divided by the number of items giving mean score. Mean scores ranged between 1.00-2.7, 2.8-3.8, and 3.9-5.00 were classified as low, moderate and high levels of student satisfaction with blended learning respectively**.**

**Tool (2): Grasha - Riechmann student learning styles scale (GRSLSS):** The GRSLSS was used in this study to identify nursing students learning styles. It contain 60 statements related to six learning style subscales: independent, avoidant, collaborative, dependent, competitive and participant learners, with 10 statement in each learning style.

**Scoring system:**

Students responses were on a 5- point likert scale ranging from strongly agree =5 to strongly disagree =1. The students are grouped into low, moderate and high on each subscale (**Grasha, 2002)**. To convert the score the obtained score for each teaching style were divided by 10. The dominant style was the style that scored the highest mean **(Glgel, 2013)**. The scoring and the classification of the **GRSLSS** are as given in

Table (1).

Table 1: The scoring and the classification of GRSLSS**:**

| GRSLSS | Low | Moderate | High |
|---|---|---|---|
| Independent | 1.0-2.7 | 2.8-3.8 | 3.9-5.0 |
| Avoidant | 1.0-1.8 | 1.9-3.1 | 3.2-5.0 |
| Collaborative | 1.0-2.7 | 2.8-3.4 | 3.5-5.0 |
| Dependent | 1.0-2.9 | 3.0-4.0 | 4.1-5.0 |
| Competitive | 1.0-1.7 | 1.8-2.8 | 2.9-5.0 |
| Participant | 1.0-3.0 | 3.1-4.1 | 4.2-5.0 |

**Tools (3): The students' academic achievement sheets:**

The students' academic achievement was calculated for students final total grades of nursing courses of the first semester regarding third and fourth academic years.

**Scoring system:**

The scoring of the students' academic achievement is divided into four levels: Excellent (85%), very good (75%), good(65%), and acceptable (60%).

**Tool validity and reliability:**

**SSBLS** has convergent validity and discriminant validity was evaluated by **Mirabolghasemi, etal (2021).** The validity of Arabic copy of **SSBLS** was assured following the back translation of Arabic copy against the original scale. The GRSLSS scale has construct validity **(Grasha& Riechmann, 1974)**. This Arabic version of scale was validated by **Glgel (2013)**. Cronbach's alpha regarding SSBLS in the present study was 0.97. Whereas 0.88 for GRSLSS.

**Field work:**

Official permission was obtained from the dean of Faculty of Nursing in Suez Canal University for collecting the data from the students regarding satisfaction with blended learning, their learning styles and academic achievement.

Self-instruction questionnaire was used by using Google drive form online software. Upon completing the survey, the students submitted their responses online through the survey platform. The survey was taking 30-40 minutes to be completed.

On the other hand, the academic achievement of the students was calculated after having the official permission from the dean of Faculty of Nursing in Suez Canal University for obtaining students final results sheets of nursing courses for third and fourth academic year.

**Pilot study:**

A pilot study was carried out on (10%) of the study participants to check the applicability and feasibility of instrument, to identify the obstacles and problems, and take needed measures to manage these obstacles and problems when collecting data. It was done including 41 students from the total population, as the following: third year (26 students), and fourth year (15 students). No modification was needed, and participants of the pilot study were not included in the study

sample.

**Ethical considerations:**

The study proposal was approved by the Research Ethics Committee at Faculty of Nursing Suez Canal (committee no. 134/1.2022). After obtaining the official agreement from the ethical committee of faculty of nursing, Suez Canal University, the written informed consent were fulfilled by the students. The students were informed that any individual included in the study has the right to refuse to participate in the study or withdraw from the study at any time with no negative consequences to them. Also, the confidentiality of the data and results were maintained.

**Data analysis:**

Data collected were coded, entered and analyzed using Statistical Package for the Social Sciences (SPSS version 21). Descriptive statistics, such as mean, standard deviation (SD), frequency, percentage were used. Spearman rank correlation was used to test the relationship between student satisfaction, learning style and academic achievement. Monte Carlo for Chi square test were used to test relations between personal characteristics and student satisfaction, learning style and academic achievement. P value was significant at <0.05.

## 3. Results

**Table (1):** Personal characteristics of nursing students (n=304).

**Table (2):** Mean score and levels of nursing students satisfaction with blended learning among nursing students (n=304).

**Figure (1):** levels of students satisfaction with blended learning among nursing students (n=304).

**Table (3):** Mean score of nursing students learning styles (n=304).

**Figure (2):** levels of nursing students learning styles (n=304).

**Figure (3):** levels of academic achievement among nursing students (n=304).

**Table (4):** Correlation between students satisfaction with blended learning, students learning styles and their academic achievement (n=304).

**Table (5):** Correlation between students learning styles and their academic achievement (n=304).

## 4.Discussion

The fast evolution in the use of technology allows educators to investigate suitable learning environments that integrate online learning with a traditional classroom lecture that provides students diverse learning style as blended learning. Student satisfaction with blended learning provides an important measure of the effectiveness learning process. One of the factors that impacts on effectiveness of blended learning is concerns on students'learning styles; better understanding of students learning styles enable educators to effectively design blended integrated learning strategies that meet students' learning need and enhance academic achievement. Therefore, this study aimed at studying students satisfaction with blended learning and their learning style in relation to academic achievement at the faculty of nursing.

Regarding the personal characteristics of nursing students, it was found that female nursing students recorded the highest percentage, whereas males recorded the least percentage. This result was in accordance with the study conducted by **Okegbemiro (2021)** who reported that a near than two third of the participants were female. While, this result was disagreed with **Kouhan et al. (2021)** who reported that male students recorded the highest percentage. In this regard, **Yousef (2018**) indicated that there was a progressive increase over time of the male nursing students. The current study result may be due to nursing as a profession is mostly specific to women, and nursing remains a female dominated profession **(Abbott & Meerabeau, 2020)**.

Also, students who used mobile device in learning process represented the highest percentage of students compared to use computer. This results were in accordance with the study conducted by **Becker, Klein, Gobling, & Kuhn, (2020)**. In this regard, **Heflin, Shewmaker, Nguyen, & education (2017)** who reported that the majority of the nursing students was recorded using a mobile device in learning process and it can successfully support students during the learning process. Whereas, this result was disagreed with **Lee, Hoe Looi, Faulkner, & Neale (2021)** who reported that students who used computer device in learning process represented the highest percentage.The result of the current study was logic because the educational apps work on mobile phones

as well. In case students do not have laptops or tablet, the mobile consider the most suitable and available device for learning. It provides flexibility in learning as well as learning through mobile devices poses both opportunities as well as challenges **(Panigrahi, Srivastava, and Sharma, 2018)**.

Regarding mean score and levels of nursing students satisfaction with blended learning, it was found that cognitive presence scored high level compared to other categories that scored moderate level for system quality, information quality, general satisfaction, teaching presence and social presence respectively. These results were in accordance with the study conducted by **Martin (2022)** who stated that the highest mean and levels was for the cognitive presence and stated that cognitive presence was a strong predictor of learners satisfaction, which is same as the finding of this study. In this regard **Giannousi** and **Kioumourtzoglou (2016)** recommended that faculty needs to focus on this presence and assure that learners are able to reach the final stage of cognitive presence.

In this regard the result of the current study was disagreed with **Al-Fraihat et al. (2020)** who stated that system and information quality scored the highest means and considered as the antecedents of learners' satisfaction with blended learning. The result of the current study may be due to nursing course materials, learning activities and assignments were designed to supports cognitive presence and on the other hand the faculty depend on problem based learning strategy that keep learners involved in brain storming session and discussion reached higher levels of cognitive presence. The current study illustrated that the highest percentage of nursing students recorded a moderate level of satisfaction with blended learning, whereas the least percentage of them recorded the high level of satisfaction with blended learning. This result was agreed with **Tayyib (2023)**. Besides, the study result is supported by **Oducado & Estoque (2021)** who was found that near than two third of students had a moderate level toward satisfaction with blended learning. Whereas the result was disagreed with **Stanislaus (2021)** who reported that the highest percentage of students recorded a high level of satisfaction with blended learning during the implementation of the blended learning.

The moderate level of satisfaction in the current study might be due to blended

learning is newly experience, while prior experience and readiness for e-learning could affect the nursing students' overall satisfaction and evaluations **(Alqahtani et al. 2021)**. Also, this result might be due to some of the problems facing e-learning, including connectivity issues, problems with the internet speed, high costs of the internet, and two-way interactions with teachers **(Farsi et al., 2022)**.

Regarding mean scores of nursing students learning styles the present study clarified that nursing students recorded the highest mean score toward independent learning style. Whereas, students recorded the lowest mean score toward avoidant learning style. These results were in accordance with the study conducted by **Aker & Şahin (2021)** who reported that the highest mean value regarding the learning styles of the students was related to independent learning style. While, the results of the current study disagreed with **Kiat-Hiong & Ying-Leh (2020)** who reported that competitive score was the lowest mean. The current study finding may be due to PBL that encourage students to learn independently **(Ghani, Rahim, Yusoff, & Hadie, 2021)**.

Concerning the levels of nursing students learning styles, the present study clarified that the highest percentage of nursing students recorded a high level of competitive learning style, followed by collaborative and independent learning style. These results were in accordance withthe study conducted by **Durmus & Guven (2020)** and **Soltan et al. (2017)** who reported that competitive learning styles scored a high level whereas dependent and participant scored a moderate level. While this result disagreed with **Phoong (2021**) who recorded that competitive learning style was in a moderate level. Also, **Aker & Şahin (2021)** recorded that the competitive learning style scored the lowest level whereas participation and independent learning scored a high levels. Concerning the levels of academic achievement regarding nursing courses, the present study clarified that the highest percentage of nursing students recorded excellent level. Whereas, the least percentage of them recorded acceptable level. These results were in accordance with the who study conducted by **Alsalhi (2019)** reported that the highest percentage of students recorded excellent level while the least percentage of them recorded acceptable level. Regarding the correlation between students satisfaction with blended learning, students learning styles and their academic

achievement, this study results revealed that there was a statistical significant positive correlation between total students satisfaction with blended learning and all learning styles except dependent style. This result was disagreed with **Chang-Tik (2018)** who reported that there was no significant correlation between students learning styles and participants' satisfaction with blended learning. In addition, the current study results revealed that there was statistical significant positive correlation between academic achievement and only one factor of students satisfaction with blended learning which was information quality. These results were in accordance with the study conducted by **Richard et al. (2020)** who found that there was significant positive relationship between information quality on learning outcome and information quality is a key predictor of net benefits through mediating effect of students' academic achievement. While, this result disagreed with **Ching & Maarof (2021)** who reported that there was no significant effect of information quality on students' academic achievement**.** Also, **Alotebi (2017)** and **Choy & Quek (2016)** reported that teaching presence and cognitive presence, were positively correlated with student achievement, these positive relationships mean that an increase in students' perceptions of teaching presence and cognitive presence was associated with an increase in student achievement.

Concerning the correlation between students learning styles and their academic achievement the present study clarified that there was no significant correlation between students learning styles and their academic achievement. These results was in accordance with the study conducted by **kohan et al. (2021)** who reported that there was no statistically significant correlation between students learning styles and their academic achievement. The current study result of non-significant correlation may indicate to the need for taking the required measures toward teaching strategies variety to be suitable and energizing learning styles during blended learning. This is assured by **kohan et al. (2021)** who indicated that inattention or insufficient attention to students' learning style reduces the effectiveness of teachers' educational activities and students' academic motivation and leads to their academic failure.

## 5. Conclusion:

Based on the findings of this study, the results concluded that the highest percentage of students recorded moderate level of students satisfaction with blended learning where cognitive presence constitute a high level of it, excellent level of academic achievement, and competitive learning style followed by collaborative and independent learning style.

Academic achievement has no a significant correlation with satisfaction with blended learning and learning style. However there is a significant correlation between satisfaction with blended learning and learning styles except dependent learning style.

## 6. Recommendations:

- Holding training courses for all students and educators to train them on best practices during applying blended learning strategies.

- Enhance active participation of students during practicing blended learning activities.

- Preparing and providing instruction that are matching with various students' learning styles.

- Further research in order to study the factors that influence student satisfaction and achievement in blended learning environments.

- Replicating the current research idea on different fields in universities, and on faculties of nursing in Egyptian universities.

**Table (1):** Personal characteristics of nursing students(n=304)

| Items | No. | % |
|---|---|---|
| **Gender** | | |
| a) Female | 198 | 65.1 |
| b) Male | 106 | 34.9 |
| **Age (Years)** | | |
| 20:<23 | 272 | 89.5 |
| 23:≤25 | 32 | 10.5 |
| **Mean ± SD ( minimum –maximum )** | 21.33±0.94 (20-26) | |
| **Academic year** | | |
| a) Third | 182 | 59.9 |
| b) Fourth | 122 | 40.1 |
| **Residence** | | |
| a)City | 176 | 57.9 |
| b)Rural | 128 | 42.1 |
| Items | N | % |
| **Type of device used in learning process** | | |
| a) Mobile | 298 | 98.0 |
| b) Computer | 6 | 2.0 |
| **Daily hours on the internet to complete learning activities** | | |
| a) <5 | 138 | 45.4 |
| b) 5<10 | 134 | 44.1 |
| c) 10<15 | 32 | 10.5 |
| **Mean ± SD (minimum –maximum)** | 5.35±3.01(1-20) | |
| **Days a week on the internet to complete learning activities** | | |
| a) 2-4 | 119 | 39.1 |
| b) 5-7 | 185 | 60.9 |
| **Median (minimum–maximum)** | 20 (1-95) | |
| **Training courses / workshops on e-learning** | | |
| a) Yes | 53 | 17.4 |
| b) No | 251 | 82.6 |

**Table (2):** Mean score and levels of nursing students satisfaction with blended learning among nursing students (n=304)

| Students satisfaction with blended learning scale | Min-max | Mean ± SD | Levels |
|---|---|---|---|
| System quality | 5-25 | 16.07±3.51 | Moderate |
| Information quality | 5-25 | 16.69±3.63 | Moderate |
| Teaching presence | 13-65 | 43.19±8.87 | Moderate |
| Social presence | 8-40 | 29.99±6.44 | Moderate |
| Cognitive presence | 12-60 | 40.76±8.23 | High |
| Global Satisfaction | 3-15 | 9.42±2.69 | Moderate |
| Total satisfaction | 47 | 156.13±28.90 | Moderate |

**Figure (1): levels of students satisfaction with blended learning among nursing students (n=304).**

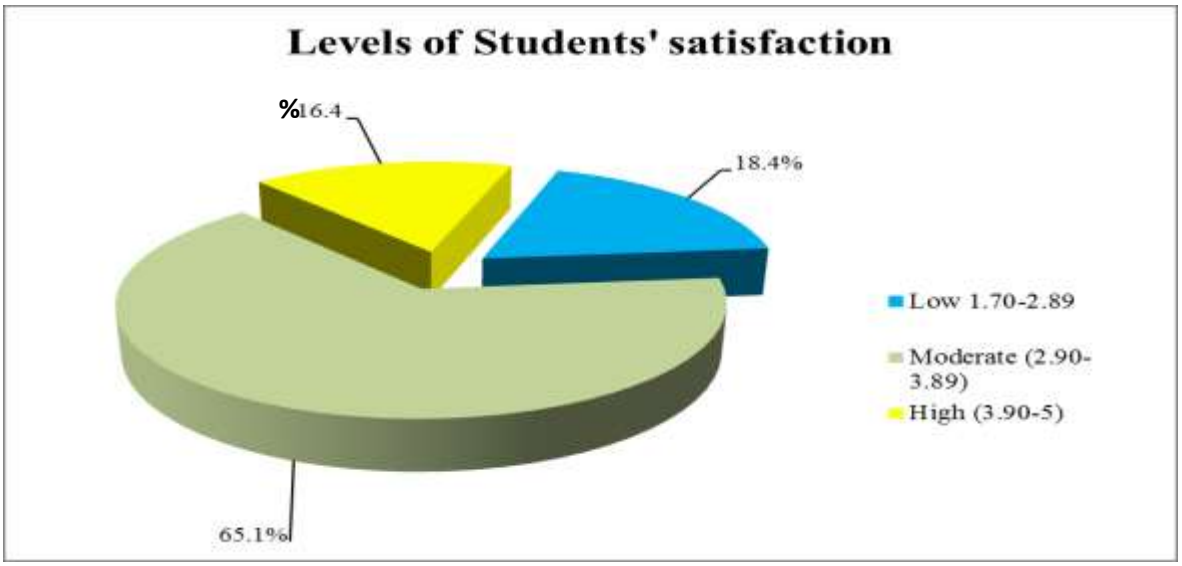


**Table (3):** Mean score of nursing students learning styles (n=304)

| learning styles | Min-Max | Mean ± SD |
|---|---|---|
| Independent | 10-50 | 37.48±4.33 |
| Avoidant | 10-50 | 32.69±5.14 |
| Collaborative | 10-50 | 37.25±5.04 |
| Dependent | 10-50 | 37.15±3.98 |
| Competitive | 10-50 | 35.45±5.80 |
| Participant | 10-50 | 35.82±5.50 |

**Figure (2):** levels of nursing students learning styles (n=304)

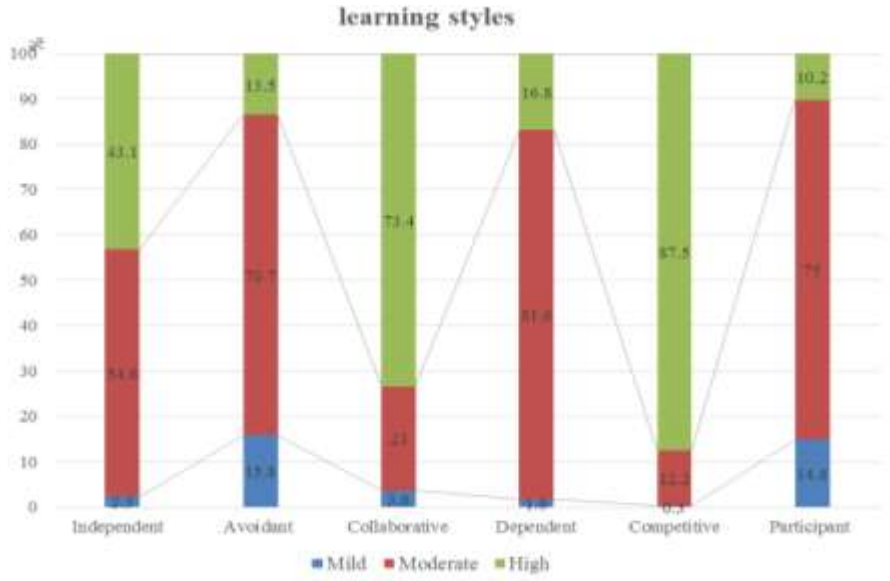


**Figure (3):** levels of academic achievement among nursing students (n=304)

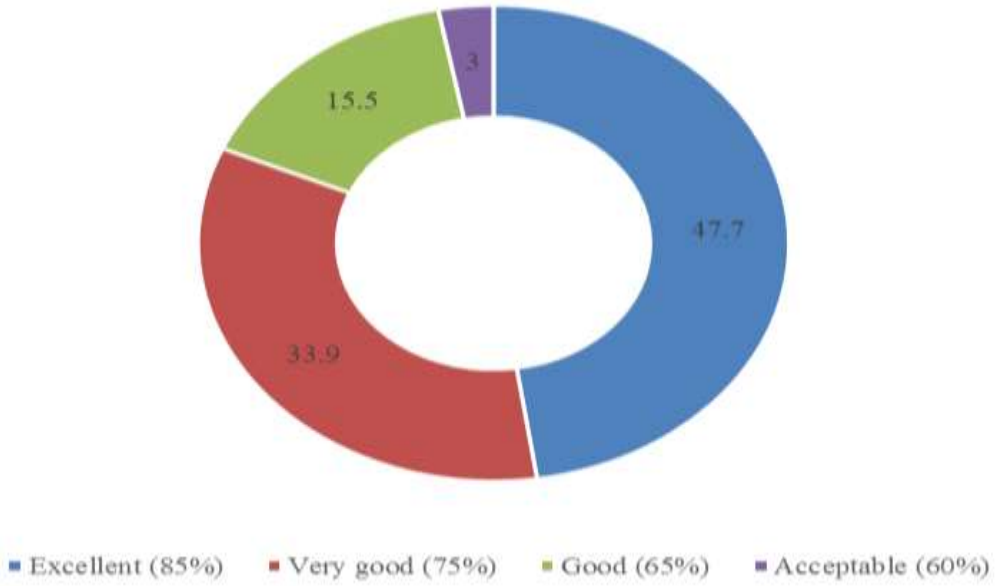

**Table (4):** Correlation between students satisfaction with blended learning, students learning styles and their academic achievement (n=304)

| Students satisfaction with blended learning scale | | learning styles | | | | | | Academic achievement |
|---|---|---|---|---|---|---|---|---|
| | | Independent | Dependent | Competent | Collaborative | Avoidant | Participant | |
| System quality | r | .184** | -.066- | .293** | .206** | .234** | .245** | .039 |
| | P value | **<.001** | .400 | **<.001** | **<.001** | **<.001** | **<.001** | .498 |
| Information quality | r | .071 | -.080- | .325** | .203** | .207** | .198** | .166** |
| | P value | .217 | .164 | **<.001** | **<.001** | **<.001** | **.001** | **.004** |
| Teaching presence | r | .202** | -.077- | .380** | .251** | .302** | .347** | .024 |
| | P value | **<.001** | .097 | **<.001** | **<.001** | **<.001** | **<.001** | .677 |
| Social presence | r | .191** | -.058- | .391** | .209** | .319** | .309** | .047 |
| | P value | **.001** | .179 | **<.001** | **<.001** | **<.001** | **<.001** | .414 |
| Cognitive presence | r | .344** | -.141-** | .429** | .188** | .381** | .451** | .059 |
| | P value | **<.001** | **.014** | **<.001** | **.001** | **<.001** | **<.001** | .305 |
| Global Satisfaction | r | .147* | .044 | .210** | .197** | .130* | .124* | .041 |
| | P value | **.010** | .449 | **<.001** | **.001** | **.023** | **.030** | .479 |
| Total satisfaction | r | .210 | -.055 | .386 | .254 | .342 | .393 | .044 |
| | P value | **<.001*** | **.339** | **<.001*** | **<.001*** | **<.001*** | **<.001*** | .466 |

**Table (5):** Correlation between students learning style and academic achievement (n=304).

| Grasha - Riechmann student learning styles scale | Academic achievement | |
|---|---|---|
| | R | P value |
| Independent | .093 | .104 |
| Avoidant | -.091 | .114 |
| Collaborative | .015 | .789 |
| Dependent | -.032 | .579 |
| Competitive | -.042 | .462 |
| Participant | -.025 | .468 |

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