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ORIGINAL ARTICLE

Staff Member & Student Satisfaction with the Integrated E-Learning among Medical Students

Yousra Ayman Yassin Soliman[1*]*, Samir Wassef, Hosnia M. Ragab[1], Hebatallah M Fawzy[1]

[1]Community Medicine Department, Faculty of medicine, Zagazig university, Egypt.

Corresponding author*
Yousra Ayman Yassin Soliman

Email:
Yousra.ayman.95@gmail.com

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ABSTRACT

Background The 21st -century is a paradigm shift of learning in which the curriculum developed at this time requires educational institutions to change their instructional approach. This study aimed to assess the level of satisfaction with integrated E-learning among staff members & medical students at Zagazig University during academic year 2023-2024.

Methods: A cross-sectional study was performed on 264 staff members & 248 undergraduate medical students of Faculty of Medicine, Zagazig University. The level of satisfaction with integrated e-learning among staff members and medical students was assessed using self-administered Arabic semi-structured questionnaire which involved questions about demographic data, level of satisfaction with integrated e-learning and drawbacks present in this new approach application.

Results: About 53% of staff members were found to be satisfied with integrated e-learning, however the remaining were not satisfied at all. As regarding students, 78.6% of them were found to be satisfied with integrated e-learning, however the remaining were not satisfied at all.

A highly significant relation was revealed between overall satisfaction about integrated e-learning and the age of staff. Satisfaction was noticed to be higher among younger age staff compared to older ones ($p<0.001$).

However, there was no significant relation between overall satisfaction and other baseline characteristics.

According to students, a significant relation was revealed between overall satisfaction about integrated e-learning and the age of students. Satisfaction was noticed to be higher among third year students compared to others ($p<0.001$).

Conclusions: The level of satisfaction with the integrated e-learning was higher among medical students compared to staff members. There was no relation between overall satisfaction and baseline data of both students and staff members except the age of the later ones. The negative feedback among those who were dissatisfied needs to work on improving the educational system, put their needs in concern as a priority and working on the infrastructure.

Keywords: E-learning; satisfaction; Blended; Staff member; Medical Students

INTRODUCTION

E- Learning is a mode of learning that takes place electronically, often via the internet that requires utilization of electronic devices. It is a powerful tool for achieving strategic objectives of the university (teaching, research and serving the society) so, it contributes to the progress on the institutional level as well as the personal

level, including both faculty and students.Many of the universities have changed their learning and teaching processes to online worldwide plus more than three ~~3~~ million higher education students started to learn using online by 2012 and now it is reaching a high level [1, 2]. Integration of basic science and clinical concepts throughout the curriculum helps students to enhance clinical reasoning skills. It enables them to foster knowledge retention and reinforces the relevance and application of basic sciences to clinical context. Integrated e-learning might improve the educational process, students' engagement and their learning outcomes, driving them to continuous education, self-efficacy and motivation[3,4].

In this student-centered paradigm, staff members serve as facilitators of learning rather than sole distributors of content knowledge. E-learning enhances interactive and collaborative learning which allows the learning process to be individualized, so, changing the staff member's role from disseminator to facilitator of the learning process. The e-learning paradigm requires a commitment of staff members' effort and time yetthey can acquire technological skills, develop technology-based classes, and deliver relevant education [5,6].

To be competitive and not lag the technological trends, an integrated learning model was elaborated which is built on a Content and Language Integrated Learning (CLIL) methodology as a framework and flipped classroom activities, project-based learning as pedagogic tools to create ablended learning environment. Unfortunately, the current practices of the CLIL program do not meet the program's expectations. Instructors observed that the students were not motivated to work hard on acquiring English in an environment where many of the students did not speak the language [7,8].

E-learning has many advantages to users over traditional classroom learning such as accessing contents courses with so limited time and locational restriction. Despite such advantages**,** e-learning deals with providing knowledge only in contrary to the traditional learning in which a real time instructor helps students to deal with specific problems like the social skills problem they find in e-learning activities [2,9].

Interestingly, e-learning is viewed by students as a complement rather than as a substitute for the traditional staff member-led teaching method. It serves as part of a blended learning system that combines e-learning with traditional teaching [3].

User satisfaction is always an important issue of concern in context of e-learning programs. User satisfaction depends on many factors such as learner characteristics, environmental factors, self-managed learning aptitude, self-efficacy, information quality & system quality[10].

Since computers are tools in e-learning settings, fear of its usage can limit students' satisfaction so, the higher the computer anxiety, the lower the level of students' satisfaction with synchronous (real time) e-learning, therefore: computer anxiety may have a negative impact on perceived student satisfaction with synchronous e-learning [11].

According to staff member satisfaction, conducting classes with the new mode motivate them to work harder and to select more interesting and practical material that enhancing the theoretical knowledge of

students. However, the process of preparing for classroom activities requires more effort & has become more time-consuming [7]. So, this study aims to evaluate any drawbacks or obstacles that may exist in integrated e-learning system & identify crucial factors that affect their satisfaction with integrated e-learning.

METHODS

A cross-sectional study was conducted on staff members & medical students of Faculty of Medicine, Zagazig University during the period from April 2023 to April 2024. According to staff members, the study was done on two stages:The first one was done by dividing Faculty of Medicine into clinical & academic departments. The 2nd stage: a number of staff members from different departments was chosen by simple random sampling method. All age categories (from demonstrator to professor) were included in the study. Proportional allocation was taken into consideration. According to medical students, a number of students from each grade was selected by simple random technique (garade one was excluded from the sample)Students in 1st year as they no longer can evaluate their satisfaction with integrated E-learning also satisfaction depends on the grade of last year. Proportional allocation was taken into consideration.

An informed consent was obtained from the study participants after clarification the nature and the objectives of the study.

Sample size: The sample was calculated using Open Epi program, assuming that the number of staff members at faculty of Medicine in academic year 2022-2023 (excluding those who are in vacations) is 2197 (and finding that the degree of satisfaction about integrated e-learning among staff members was 73.5% [12] so the sample was 264 staff members with confidence level of 95% and power of test 80%.

According to medical students, the sample was calculated using Open Epi program, assuming that the number of medical students at the academic year 2022-2023 was 8045 and finding that the degree of satisfaction about integrated e-learning among medical students was 79% [13] so the sample was 248 students with confidence level of 95% and power of test 80%.

Inclusion criteria: medical students from 2nd, 3rd, 4th&5th years of faculty of medicine. Staff members participating in designing & implementing the curriculums. Both sexes.

Exclusion criteria: Students in 1st year as they no longer can evaluate their satisfaction with integrated E-learning and also satisfaction depends on the degree of last semester. Staff members on vacations. Uncompleted questionnaire.

Data collection tools: according to staff members, the data was collected through self-administrated Arabic semi-structured questionnaire which included 3 parts: the first part: questions about Socio-demographic characteristics (age, sex, specialty & job title). The 2nd part included questions about staff member satisfaction with integrated e-learning. This part included 7 items which were assessed on a 2-point Likert scale 0 (Not satisfied)**,** 1 (Satisfied).

The sum of the staff members' evaluations for the 7-item replies was used to get the overall satisfaction score. Seven points is the highest possible score, with 0 points serving as the lowest. The level of satisfaction increases with a higher score. The third part of the

questionnaire included questions asking about obstacles & barriers facing staff members, this part included 14 items which were assessed on a 3-point Likert scale 0 (disagree), 1 (don't know), 2(agree). Validity of the questionnaire was done by panel of experts from Public-health and Community medicine department, also, reliability of the questionnaire was done, and Cronbach alpha was found to be 0.760.

Concerning students' data, it was collected through self-administrated Arabic semi-structured questionnaire which included 3 parts: the first part: questions about Socio-demographic characteristics (age, sex, grade, degree of last semester, residence, computer use)

The 2nd part included questions about factors used to assess students' satisfaction with integrated e-learning. This part included 9 items which were assessed on a 2-point Likert scale 0 (Not satisfied), 1 (Satisfied). The sum of the students' evaluations for the 9-item replies was used to get the overall satisfaction score. Nine points is the highest possible score, with 0 points serving as the lowest. The level of satisfaction increases with a higher score. The third part included questions to find out the obstacles & barriers facing medical students, this part included 13 items which were assessed on a 3-point Likert scale 0 (disagree), 1 (don't know), 2(agree). Validity of the questionnaire was done by panel of experts from Public-health and Community medicine department, also, reliability of the questionnaire was done and Cronbach alpha was found to be 0.865.

Ethical considerations:

An informed consent was obtained from the studied participants. An approval from Institutional Research Board (IRB) of Faculty of Medicine, Zagazig University was obtained with IRB number 10522 on 5/3/2023

STATISTICAL ANALYSIS

SPSS version 22.0 was used for the statistical analysis of the data. Categorical qualitative variables were expressed as absolute frequencies (number) and relative frequencies (%), whereas continuous quantitative variables were expressed as the mean ± SD & Continuous data were subjected to the Shapiro-Wilk test to test the normality. Independent sample t-test was used to test the significance between two groups of quantitative normally distributes data. The $\chi 2$test, Chi-square test, was used to compare categorical data. For statistical significance, a p-value of less than 0.05 was considered significant (*), a p-value of less than 0.001 was considered highly significant (**), and p-value equal to or greater than 0.05 was considered statistically insignificant (NS).

RESULTS

As regards staff members: the age of the studied participants ranged between 26 and 70 years with a mean of about 34 years. The majority of them were females (81.8%). As regards specialty, those who participated more were academic staff members (76.1%). According to job title it was found that 42.3% of the participants were demonstrators, and the least who participated were residents by 4.9% (Table 1).

As regards students: the age of the studied participants ranged between 18 and 24 years with

mean of about 21 years. More than half of them were males (53.6%). Most of the participated students were from 3rd year

(31.9%) while the least are from 5th year by (20.6%). The majority
of students had excellent grade in the last academic year (41.1%) while the minority of them had weak grade (4%). As regards residence, nearly one third of the students lived in rural areas (30.6%), while the remaining 69.4% lived in urban areas. According to computer use more than three quarters of them use it a lot of times while only 0.4% never use it (Table 2).

As regard staff members, it was found that (140) 53% of staff members were satisfied with integrated E-learning, however, the remaining 47% were not satisfied with integrated E-learning. (Figure S 1).

As regards staff members:

More than half of staff members agreed that the educational objectives align with the content than the traditional one (61%) while the simplicity of explaining academic subjects within the integrated system was found to be the least satisfying item (18.2%). (Table 3).

Among the obstacles, increased working hours and workload, unsuitability of integrated system to all specializations, infrastructure weakness and lack of motivation were found to be the most frequent obstacles faced by staff members by (87.1%, 86%, 83.7% and 83.3% respectively). However, dealing with e-learning platforms was recorded to be the least obstacle (36.4%). (Table 4).

It was found that there was a highly significant relation between overall satisfaction about integrated e-learning and the age of staff members to be higher in younger group compared to older ones. However, there was no significant relation between satisfaction and gender, specialty & job title of the staff member. (Table 5).

As regards students:

It was found that (195) 78.6% of students were satisfied with integrated E-learning and (53) 21.4% of them were not satisfied. (Supplementary Figure 1).

The majority of the students were satisfied with TBL classes, SGS and flipped lectures (89.1%, 84.3% and 80.2% respectively). However, the amount of information provided in lectures compared to the time specified for them was noticed to be the least satisfying item. (Table 6). As regarding obstacles faced by the students, 85.1% and81.9% of the students agreed that the density of academic courses compared to the short duration of the semester and anxiety and stress from dealing with difficult scientific curriculum were found to represent a great barrier respectively. However, dealing with the English language was expressed as the least barrier (24.2%) (Tables 6,7).

There was significant relation between overall satisfaction & academic year of students to be higher among third year students (93.7%). However, there were no significant relations between overall satisfaction & sex, last grade, residence, and computer usage. (Table S1).

Table (1): Baseline data of the staff members group.

Variable	**Studied group** *(n=264)*	
Age *(years)* Mean ± SD Range	 33.5 ± 7.3 (26-70)	
	No	**%**
Sex Female Male	 216 48	 81.8% 18.2%
Specialty Academic Clinical	 201 63	 76.1% 23.9%
Job title: Professor Assistant professor Lecturer Assistant lecturer demonstrator Residents	 22 23 42 52 112 13	 8.3% 8.7% 15.8% 19.6% 42.3% 4.9%

Table (2): Baseline data of the students group.

Variable	**Studied group** *(n=248)*	
Age *(years)* Mean ± SD Range	 21 ± 1.5 (18-24)	
	No	**%**
Sex Female Male	 115 133	 46.4% 53.6%
Academic year: 2nd year 3rd year 4th year 5th year	 63 79 55 51	 25.4% 31.9% 22.2% 20.6%
Grade of last academic year: Excellent Very good Good Pass Weak	 102 72 43 21 10	 41.1% 29% 17.3% 8.5% 4.0%

Variable	Studied group *(n=248)*	
Residence:		
Urban	172	69.4%
Rural	76	30.6%
Computer use:		
Never	1	0.4%
Sometimes	43	17.3%
Lot of times	204	82.3%

Table (3): Satisfaction about integrated e-learning among staff members.

Variable To what extent are you satisfied with the idea of?	Studied group *(n=264)*	
	No	**%**
Result of the integrated system in comparison to the traditional one.		
Not satisfied	187	70.8%
Satisfied	77	29.2%
Student engagement and improvement in learning outcomes.		
Not satisfied	189	71.6%
Satisfied	75	28.4%
Students' response to the integrated system.		
Not satisfied	198	75%
Satisfied	66	25%
The simplicity of explaining academic subjects within the integrated system.		
Not satisfied	216	81.8%
Satisfied	48	18.2%
Alignment of the educational objectives with the content.		
Not satisfied	103	39%
Satisfied	161	61%
Integrating educational content across different departments is rather than teaching subject-specific material for each department.		
Not satisfied	184	69.7%
Satisfied	80	30.3%
Teaching in the integrated system.		
Not satisfied	207	78.4%
Satisfied	57	21.6%

Table (4): Obstacles and barriers in integrated e-learning among staff members.

Variable **Do you consider this item as an obstacle to the smooth progress of the educational process?**	**Studied group** *(n=264)* **No**	**%**
Lack of motivation.		
Disagree	18	6.8%
Don't know.	26	9.8%
Agree	220	83.3%
Dealing with e-learning platforms.		
Disagree		
Don't know.	102	38.6%
Agree	66	25%
	96	36.4%
Lack of information technology skills.		
Disagree		
Don't know.	53	20%
Agree	51	19.3%
	160	60.6%
Difficult and dense academic materials.		
Disagree	58	22%
Don't know.	37	14%
Agree	169	64%
The integrated system is not suitable for all specializations/contents.		
Disagree		
Don't know	9	3.4%
Agree	28	10.6%
	227	86%
Weakness in the infrastructure efficiency in the field of technology.		
Disagree	12	4.5%
Don't know	31	11.7%
Agree	221	83.7%
Not meeting my students face-to-face prevents me from getting to know them.		
Disagree	38	14.4%
Don't know	32	12.1%
Agree	194	73.4%
Motivating my students in an online environment is more challenging than motivating them in a traditional setting		
Disagree		
Don't know	46	17.4%
Agree	25	9.5%
	193	73.1%

Variable Do you consider this item as an obstacle to the smooth progress of the educational process?	Studied group *(n=264)*	
	No	**%**
Teaching a complete course online is a significant burden compared to the traditional classroom setting. Disagree Don't know Agree	 52 46 166	 19.7% 17.4% 62.9%
The level of participation of my students in online full-course discussions is lower than in the traditional setting. Disagree Don't know Agree	 29 37 198	 11% 14% 75%
High number of students. Disagree Don't know Agree	54 28 182	20.5% 10.6% 68.9%
Increased working hours and workload in the integrated system. Disagree Don't know Agree	 20 14 230	 7.5% 5.3% 87.1%
Coordination and compatibility of schedules between modules and different departments. Disagree Don't know Agree	 70 29 165	 26.5% 11% 62.5%
Difficulty in communication between faculty members and students. Disagree Don't know Agree	 66 35 163	 25% 13.2% 61.7%

Table (5): Relationship between overall satisfaction and baseline characteristics among the staff members.

Variable	Not satisfied (124)		Satisfied (140)		t-test	P Value
Age *(years)* Mean ± SD Range	 35.61 ± 6.78 26– 70		 31.69 ± 7.368 26 – 70		4.476	0.000 (HS)
	N	**%**	**N**	%	χ^2	**P**
Sex: Female Male	 106 18	 49.1% 37.5%	 110 30	 50.9% 62.5%	2.112	0.146 (NS)

Variable	Not satisfied (124)		Satisfied (140)		t-test	P Value
specialty: Academic Clinical	 100 24	 49.8% 38.1%	 101 39	 50.2% 61.9%	2.616	0.106 (NS)
Job title: **Professor (n=22)**	14	63.6%	8	36.4%	2.676	0.101 (NS)
Assistant professor (n=23)	16	69.6%	7	30.4%		
Assistant Lecturer (n=52)	27	51.9%	25	48.1%		
Lecturer (n=42)	33	78.6%	9	21.4%		
Demonstrator (n=112)	29	25.9%	83	74.1%		
Resident (n=19)	5	38.5%	8	61.5%		

$\chi^{2:}$ Chi-square test. NS: non-significant difference (P>0.05).

Table (6): Satisfaction about lectures among students.

Variable To what extent are you satisfied with?	Studied group. *(n=248)*	
	No	**%**
Using various teaching methods, such as recorded lectures. Not Satisfied Satisfied	 76 172	 30.6% 69.4%
Interactive Lectures. Not Satisfied Satisfied	 63 185	 25.4% 74.6%
Team-Based Learning (TBL). Not Satisfied Satisfied	 27 221	 10.9% 89.1%
Flipped Lectures. Not Satisfied Satisfied	 49 199	 19.8% 80.2%

Variable To what extent are you satisfied with?	Studied group. *(n=248)*	
	No	**%**
Small Group Sessions (SGS). Not Satisfied Satisfied	 39 209	 15.7% 84.3%
Discipline of Lecture Schedule. Not Satisfied Satisfied	 62 186	 25% 75%
Student participation in lectures. Not Satisfied Satisfied	 59 189	 23.8% 76.2%
The amount of information provided in lectures compared to the time specified for them Not Satisfied Satisfied	 173 75	 69.8% 30.2%
Presenting lectures in an interesting way. Not Satisfied Satisfied	 110 138	 44.4% 55.6%

Table (7): Barriers against integrated E-learning among students.

Variable Do you see this item as an obstacle to the smooth progress of the educational process?	Studied group. *(n=248)*	
	No	**%**
Concerns about dealing with computers. Disagree Don't know Agree	 120 33 95	 48.4% 13.3% 38.3%
Lack of information technology skills. Disagree Don't know Agree	 78 33 137	 31.5% 13.3% 55.2%
Late announcement of schedules. Disagree Don't know Agree	 55 22 169	 22.2% 9.7% 68.1%
A significant increase in the number of students. Disagree Don't know Agree	 53 52 143	 21.4% 21% 57.7%

Variable Do you see this item as an obstacle to the smooth progress of the educational process?	Studied group. *(n=248)*	
	No	**%**
Large amount or difficulty of assignments given to students with short deadlines.		
Disagree	62	25%
Don't know	38	15.3%
Agree	148	59.7%
Density of academic courses compared to the short duration of the semester.		
Disagree	22	8.9%
Don't know	15	6%
Agree	211	85.1%
Insufficient assistance and support from staff members.		
Disagree	77	31%
Don't know	54	21.8%
Agree	117	47.2%
The integrated system does not respond to the needs of students.		
Disagree	30	12.1%
Don't know	65	26.2%
Agree	153	61.7%
Anxiety and stress from dealing with the difficult scientific material.		
Disagree	25	10.1%
Don't know	20	8.1%
Agree	203	81.9%
Difficulty in dealing with the English language.		
Disagree	161	64.9%
Don't know	27	10.9%
Agree	60	24.2%
The integrated system does not meet the needs of the job market.		
Disagree	53	21.4%
Don't know	119	48%
Agree	76	30.6%

Variable Do you see this item as an obstacle to the smooth progress of the educational process?	Studied group. *(n=248)*	
	No	**%**
Technical problems related to communication networks and electricity, such as interruptions or slow connections.		
Disagree	46	18.5%
Don't know	45	18.1%
Agree	157	63.3%
Short time duration for taking exams, and increased difficulty.		
Disagree	60	24.2%
Don't know	31	12.5%
Agree	157	63.3%

DISCUSSION

The main purpose of applying new teaching-learning methods is not only to deliver the knowledge in such a way that it is easy for the students to understand but it must fill the drawbacks present in current medical curriculum. [14].

In this study 61% of the staff members were satisfied with the educational objectives alignment with the content which can lead to better results than the traditional one. These results were consistent with Pane et al. [15] and his colleagues who found that 40% of staff members commented that the contents presented in the e-module design were appropriate.

In the current study, 18.2% of staff members were satisfied with the simplicity of explaining academic subjects within the integrated system. In similarity with a study done by Joseph et al. [16] and his colleagues on staff members, 8.5% of them reported that the students understand the material.

Concerning obstacles, more than three quarters (87.1%) of staff members reported that the increase in working hours and workload are great obstacles facing them. On the other hand, a study done in Zagazig University by Zalat et al. [17] and his colleagues demonstrated that 20.2% of staff members claimed of the long time to prepare for the online course and 28.3% of them claimed of the heavy workload. This variation may be related to difference in the teaching hours, higher workload on staff & variations in sample size, methodological issues like inclusion criteria and exclusion criteria. Also, about one third (36.4%) of Staff members reported an obstacle in dealing with e-learning platforms. In consistent with the study done by Zalat et al. [17] and his colleagues in studying the barriers of e-learning as reported by the university staff members showed that (40%) reported insufficient/ unstable internet connectivity followed by inadequate computer labs (36%), lack of computers/ laptops (32%), and technical problems (32%). In contrast with a study done by Nikolopoulou. [18] in Greece, only 4% of them reported inadequate teacher training on dealing with platforms. This variation may be due to insufficient training, bad Wi-Fi or internet or absence of support system dealing with internet problems.

In addition, 53% of staff members are satisfied with integrated E-learning while 47% are not satisfied with it as a tool for studying. In contrary to another study done by Toppo et al. [19], for 4th Semester students in which Pediatrics, Community Medicine, Microbiology and Pathology departments were included for this project, 100% faculty members agreed that this new integrated method of teaching is very useful for students as it has less time consuming with syllabus burden in a comparison to conventional teaching.

There was a highly significant relation between overall satisfaction about integrated e-learning and the age of staff members to be higher in younger group compared to older one, however, there was no significant relation between satisfaction and gender, specialty & job title of the staff member. Likewise, Vorina et al. [20] and colleagues took a sample consisted of 594 respondents in the Savinja Statistical Region in Slovenia. They found no statistically significant relation between satisfaction and both job title and gender. Also, a study done by Sattayaraksa et al. [21], mentioned that gender does not significantly affect perceptions of online learning success during the research. In contrast, position and year of experience have significant effects.

According to responses of students, in this study we found that the students were satisfied with TBL classes (89.1%). This finding is in agreement with the study carried out by Burgess et al. [22] in which 83% of students demonstrated strong agreement with TBL. On the other hand, the current study reported 69.8%dissatisfaction with the amount of information provided in lectures compared to the time specified for them which was in agreement with a study carried out by Kolhe et al. [14] which demonstrated that 50% of students saw that this technique is lengthy and time consuming cuts down the time of self-study.

In this research, the majority of the students (85.1%) demonstrated that the academic courses are dense compared to the short duration of the semester and it was found to be the most barrier in the educational process. In contrast, another study done by Tatiana et al. [7] on 63 undergraduate students (4th-year) from Peter the Great St. Petersburg Polytechnic university took part demonstrated that only 15% of respondents mentioned that material was too complicated, and they had to search for additional information with more detailed explanation. This variation maybe due to colleges variations such as workload on students more density in curriculum or difference in competencies.

The least item that was demonstrated by students as a barrier in our study, was the difficulty in dealing with the English language (24.2%) which is in consistent with a study carried out by Granel et al. [23] in theBarcelona who declared that 3.8% did have difficulties following the content & language integrated of the lessons.

As regarding students, it is demonstrated that 75.6% of students were satisfied with integrated E-learning and 21.4% of them were not satisfied. Similar study findings also revealed by Leon et al. [24] that 69% were satisfied and 31% weren't satisfied. It is in line with a study carried out by Chowdhury et al. [25] who stated a significant improvement in student satisfaction compared with conventional lectures.

There was significant relation between overall satisfaction & academic year of students to be higher among third year students (93.7%). However, there were no significant relations

between overall satisfaction & sex, last grade, residence, and computer usage which is in line with a study carried out by Venkatesh et al. [3] which demonstrated that student satisfaction was not affected by age, Gender and performance.

CONCLUSIONS

The current findings indicated that nearly half of staff members were satisfied with integrated E-learning. The most satisfying factor for the staff members was the educational objectives' alignment with the content than the traditional one. The most dissatisfying factor to them was the simplicity of explaining academic subjects with the integrated system. The most obstacle was increased working hours and workload by more than three quarters &there was a highly significant relation between overall satisfaction about integrated e-learning and the age of staff members to be higher in younger group compared to older one. There was nosignificant relation between gender, specialty & job title of the staff member. **According to students**, the majority were satisfied with TBL classes, SGS and flipped lectures. Most of the student were dissatisfied with huge amountof information provided in lectures compared to the time specified for them. The majority of them criticized the density of academic courses compared to the short duration of the semester to be the most barrier & stress from dealing with difficult scientific curriculum was found to represent a great barrier. There was significant relation between overall satisfaction & academic year of students to be higher among third year students (93.7%). However, there were no significant relations between overall satisfaction & sex, last grade, residence, and computer usage. In summary, while integrated learning has its benefits, addressing faculty workload and ensuring effective student support are crucial for overall satisfaction.

Author contribution: Every single one of the authors made important contributions to the final product. Data gathering, statistical analysis, and draught writing were all done, conceived of the study, coordinated its completion, and wrote the final manuscript.

Recommendations

For staff members:

Ensure that the e-learning platform is user-friendly, reliable, and efficient. Invest in well-designed courses and competent instructors who can effectively use integrated learning tools. Address administrative issues promptly. maximize the use of e-learning tools. Professors should adapt their information presentation methods to leverage e-learning capabilities. Implement training programs for both students and faculty to enhance e-learning proficiency. **User-friendly platform**: Ensure the e-learning system is intuitive and easy to navigate.

Certificates or badges: Acknowledge completion of e-learning courses. **Recognition and Rewards** for staff members. If workload consistently exceeds capacity, advocate for additional staffing. Prioritize employee well-being to prevent staff burn out. Encourage team members to share their workload challenges. Provide support for work-life balance and set clear boundaries

For students:

Institutions should carefully design and structure condensed courses to ensure meaningful learning outcomes. Balancing course density with effective teaching strategies is crucial to maintain quality education.

Discussion boards: Encourage students to ask questions and share insights.

Implement training programs for both students and faculty to enhance e-learning proficiency. Identify key variables affecting satisfaction. Conduct research to understand factors impacting student satisfaction in e-learning systems. Develop and test an integrated model of acceptance and satisfaction.

Continuous assessment, feedback, and adaptation are essential for improving e-learning experiences.

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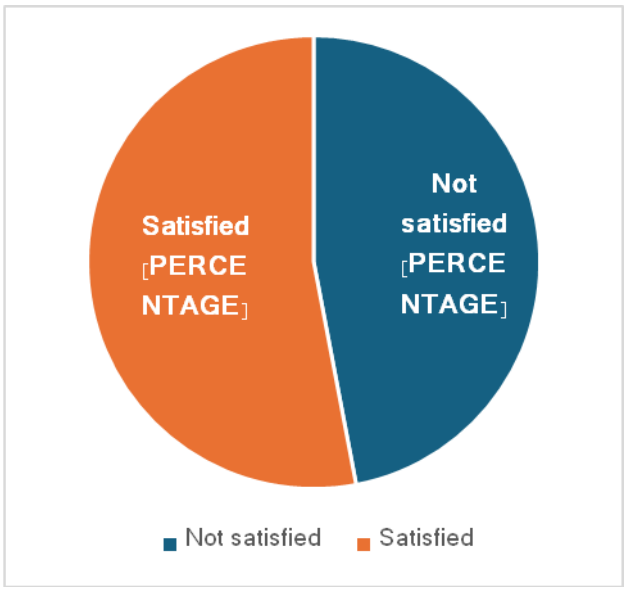
Table (S1): Relationship between overall satisfaction and baseline characteristics among the students.

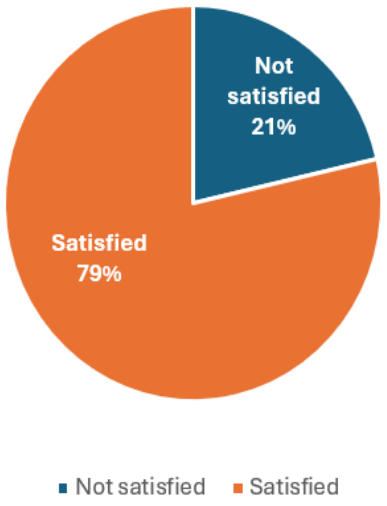
Variable	Not satisfied (53)		Satisfied (195)		t-test	P Value
Age *(years)*						
Mean ± SD	21.3 ± 1.6		20.9 ± 1.52		1.509	0.133
Range	18– 24		18 - 24			(NS)
	N	**%**	**N**	%	χ^2	**P**
Sex:						
Female	23	20	92	80	0.240	0.624
Male	30	22.6	103	77.4		(NS)
Academic year:						
Grade 2	18	28.6	45	71.4	7.407	0.006
Grade 3	5	6.3	74	93.7		(SS)*
Grade 4	12	21.8	43	78.2		
Grade 5	18	35.3	33	64.7		
Grade of last year:						
Excellent	20	19.6	82	80.4	0.011	0.914
Very good	14	19.4	58	80.6		(NS)
Good	9	20.9	34	79.1		
pass	8	38.1	13	661.9		
Weak	2	20	8	80		

Variable	Not satisfied (53)		Satisfied (195)		t-test	P Value
Residence						
Urban	40	23.3	132	76.7	1.187	0.276
Rural	13	17.1	63	82.9		(NS)
Computer use						
Never	0	0	1	100	0.2729	0.6014
Sometimes	11	25.6	32	74.4		(NS)
Lot of times	42	20.6	162	79.4		

t test: Independent sample t test. $\chi^{2:}$ Chi-square test. NS: non-significant difference (P>0.05). SS statistical significant difference (p<0.05)



(A)



(B)

Figure S 1: Pie charts showing: (A): overall satisfaction among staff members of Faculty of Medicine Zagazig University (264 staff member), (B): Overall satisfaction among students of Faculty of Medicine Zagazig University (248 students).

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