

The Impact of Self - Directed Learning Readiness on Online Learning Engagement among Nursing Students

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Abstract

Background: Self-directed learning a vital educational principle in higher education that promoted by various institutions due to its value in developing professionals to become lifelong learners. Additionally, self-direction plays an emphasized role in online learning environments.

Aim:The aim of this study to explored the impact of self-directed learning readiness on online learning engagement among nursing students.

Design: A quasi-experimental research design used in this study.

Setting: This study was conducted at Faculty of Nursing of Fayoum University on the first grad students.

Subjects: A convenience sample, the total subject at the time of collecting data were (n=240) of the first grade students have or have no readiness to apply online learning engagement.

Tools of data collection: Data were collected using two tools; (I): Self-directed learning readiness questionnaire and (II):Student online learning engagement scale.

Results: It shows was a highly statistically significant positive correlation between cumulative self-directed learning readiness and online learning engagement during, pre and post & three months follow up among the studied nursing students.

Conclusion: There was a highly statistically significance positive correlation between self-directed learning readiness and online learning engagement among the studied nursing students.

Recommendations: Develop training programs regarding self-directed learning readiness and online learning engagement to maintain satisfactory level of nursing student.

Introduction:

Instead of a teacher- centered learning method self-directed learning was a student-centered learning method that encourages individual learners to take more control of their own learning process with or without the help of others. Under this learning method students can freely decide what they learn and how they want to learn (**Amber, 2022**). Learning a life-long process, entails the ability, desire to continually gain knowledge and skills. Self-directed learning requires the learner to take responsibility for manage their own learning needs. Formulate plans to meet these goals. One's level of self-directed learning readiness was thought to exist on a continuum and impacted by one's abilities, attitudes and personality traits but it can be improved through experience and practice with autonomous learning activities (**Brandon, 2022**).

Keywords:

*Engagement,
Readiness, Self-
Directed Learning and
Student Online
Learning.*

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Self-directed learning readiness a high level of flexibility. Can start by incorporating it into smaller lessons that last only a day or two. If you decide to use this learning strategy in your classroom it might be beneficial first to give students a smaller lesson to complete on their own. This allows them to get used to doing it successfully before beginning a larger project by themselves (McLaughlin, 2018). Self-directed learning readiness a journey of continuous growth and development. It requires a proactive and persistent approach to learning an open mindset and a commitment to lifelong learning. By cultivating self-directed learning readiness, individuals can unlock their full potential, expand their knowledge, skills, pursue their passions with autonomy and enthusiasm (Abdelhafez, 2020).

Student engagement closely related to attendance, grades, general well-being, school success, absenteeism, school dropout, social problems and subsequent challenges in adulthood (including health and career). While students may display both proactive engagement (i.e., goal setting and planning) engagement may also be reactive (i.e., trying to “fix” what was found to be poorly functional learning strategies). The risks of not being able to engage in learning should not be underestimated or underplayed. That engagement a critical for learning can be reflected in several reviews conducted during recent decades (Nina, 2022).

The goal of overall education to produce educated citizens. Majority of the institutes are implementing self-directed classes. It would be possible only with a nursing teacher's help. Teacher's role was like a facilitator than a traditional teacher. The main role of teachers to promote awareness in students about SDL. To engage students in SDL activities like topic discussion are one of the major components while learning through SDL. Also a teacher's role to engage students in group discussions through SDL strategies (Khalid, 2020). Self-direction plays an emphasized role in online learning environments. Self-directed learners actively engage in the learning process and can adopt proper learning strategies according to the learning setting. A technology-rich learning environment can provide students with great opportunities and abilities to be self-directed in their learning (Laine, 2021).

Engaging students in online learning has become one of the most important discussions in educational circles. Teaching in an online educational environment may be more challenging because students might be easily distracted by family members or the temptations of the web. Students may also feel frustrated and isolated in an online classroom compared to in-person learning,

making it harder to achieve positive outcomes (Mark, 2019).

All institutions and schools around the world converted from in-person instruction to online versions as a result of the COVID-19 pandemic. Online education thus replaced all other forms of instruction. Both students and teachers found it difficult to adjust to the quick shift to online learning. Finding a dependable wi-fi connection, setting up a home office in a private, quiet and well-lit space. Students were less engaged when there was no physical interaction between professors and students (Klodiana, 2022).

Significance

Self-directed learning was described as learning on one's initiative with the learner taking major responsibility for the effort's design, implementation and evaluation using SDL as teaching approach to develop students' abilities to self-regulate their teaching-learning process (Grande, 2022). Self-directed learners actively engage in the learning process and can adopt proper learning strategies according to the learning setting. A technology-rich learning environment can provide students with great opportunities and abilities to be self-directed in their learning (Laine, 2021).

The reference to learning strategies previous studies showed that there are a number of strategies to enhance and promote SDL. It was founded that self-directed learners can teach other student's too as to transfer their own learned knowledge. Further, group work assignments help student's in understanding subject matter with full understanding while the self-directed learners can utilize their learned knowledge. By doing so, it had enhance their learning while promoting to a wider range. Likewise and collaborative learning also enhances SDL. It was found that interactive online sessions provide different projects (Khalid, 2020).

Online learning an innovative way of learning that appears promising in enhancing information exchange and decreasing the curricula load for the students. Expected to improve the quality of the learning process and the graduate to meet the expectation of the nursing labor market. So, it continues to be an area of growing concern among academic providers (Ibrahim, 2020).

National and international investigations have been done to explore SDL in nursing education (Hill, 2020). Additionally only a few studies focus on SDL readiness of undergraduate nursing students and its relation to online learning engagement still in need of more investigations (Dogham, 2022).

Aim of the study:

The study aimed to explored the impact of self-directed learning readiness on online learning

engagement among nursing students; Through the following objectives;

1. Assess level of the self-directed learning readiness among nursing students.
2. Assess level of online learning engagement among nursing students.
3. Design educational program regarding self-directed learning readiness.
4. Implement educational program regarding self-directed learning readiness.
5. Evaluate the impact of self-directed learning readiness on online learning engagement among nursing students.

Research hypotheses:

H: There will be significance differences among nursing students about the online learning engagement before and after application of educational program.

Subject and Methods

This study portrayed under the four main designs as follows;

- I- Technical design.
- II- Operational design.
- III- Administrative design.
- IV- Statistical design.

I- **Technical design:** The technical design included research design, setting, subject and tools for data collection.

Research design: A quasi-experimental research design used in this study.

Setting:

The study conducted at the Faculty of Nursing in Fayoum University. Which affiliated to Ministry of high education, the Faculty has only one Nursing program for first grade student distributed on six different scientific nursing departments, Medical Surgical Nursing Department, Pediatric Nursing Department, Maternity and Gynecological Nursing Department, Community Health Nursing Department, Psychiatric and Mental Health Nursing Department and Nursing Administration Department.

Subjects:

A convenient sample included of all first grade students in Faculty of Nursing at Fayoum University had or not had readiness to apply online learning engagement were involved in the study. The total subjects of the study at the time of collected data were (n=240).

Tools of data collection:

Two tools used to collected necessary data as the following;

First tool; Self-Directed Learning Readiness (SDLRS) Questionnaire sheet; This tool used to assess the

level of the self-directed learning readiness which consisted of two parts;

Part 1: Personal characteristics of the participants which included (Age, gender, Place of birth, Current residence, Marital statuses, Type of secondary and Attending any training program regarding self-directed learning readiness).

Part 2: Self-Directed Learning Readiness (SDLRS) Questionnaire sheet. This tool developed by (*Guglielmino, 1977*) and modified by the researcher based on literatures review. It consisted of (58) items modified to (41) items according to "jury" opinion which covered eight dimensions in self-directed in learning; (Openness to learning opportunities contained (8 items), Self-concept as an effective learner contained (6 items), Initiative and independence in learning contained (8 items), Informed acceptance of responsibility for one's own learning contained (6 items), Love of learning contained (3 items), Creativity contained (3 items) and ability to use basic study skills and problem-solving skills contained (2 items).

Scoring system:-

The participants responses on a 5-points Likert scale which ranged from Almost never (1) to Almost always (5) as the following; (1) (Almost never), (2) (Not often), (3) (Sometimes), (4) (Usually) and (5) (Almost always). Negative items were reverse items (n= 20,23,25,27,28,32,34,35,36,38&40). That included (41 items) with a total score (205). The total grades for each item were summed up and then converted into a percentage score. They were classified in to three levels.

Total participants responses (< 60% as low level), (3) on the 5-points Likert scale (≥ 60% to < 75% as moderate level) and (4-5) on the 5-points Likert scale (≥ 75% as high level)

(*Millanzi et al., 2021*) and (*Dogham et al., 2022*).

Second tool; (Student Online Learning Engagement Scale, *SEOLQ*) Questionnaire sheet; This tool developed by (*Pintrich, 1991*) and (*Eachus, & Cassid.y2006*) adapted by (*C.Schumacher, 2018*) and modified by the researcher based on literatures review. It consisted of (29) items which covered four dimensions in online learning engagement; (Goal orientation contained (5 items), Time and study environment contained (6 items), Self-regulation contained (7 items) and Web user self-efficacy contained (11 items).

Scoring system: -

The participants responses were on 7-points Likert scale modified to a 5-points Likert scale according to "jury" opinion which ranged from Disagree (1) to Agree (5) as the following; (1) (Disagree), (2) (Somewhat disagree), (3) (Neither agree nor disagree), (4) (Somewhat agree) and (5) (Agree). Negative items were reverse items (n= 8,10,11,26,27,28&29). That included (29 items) with a total score (145). The total grades for each item were summed up and then converted into a

percentage score. They were classified in to three levels.

Total participants responses (< 60% as low level), (3) on the 5-point Likert scale (≥ 60% to < 75% as moderate level) and (4-5) on the 5-points Likert scale (≥ 75% as high level), (*Millanzi et al., 2021*) and (*Dogham et al., 2022*).

Validity:

The developed tool formulated and submitted to five experts (3 professors and 2 assistant professor) in nursing administration from Faculties of Nursing in different Universities (Ain-Shams

University, Elmansora University and Cairo University) to assess the content validity needed modifications were made.

Reliability:

The researcher conducted a pilot study. Request from ten first grade students to fill out Survey. Then two weeks later the same ten first grade students filled it up again so the researcher were compared responses of the study. In this way the reliability of the survey was established by connected the dual degrees of the first administration to the second management. This procedure created a test reliability coefficient.

Table;(1)

Self-directed learning readiness		
Total Questionnaire	No of items	Alpha Cronbach test
	41	0.999
Onlinelearningengagement		
Total Questionnaire	No of items	Alpha Cronbach test
	29	0.992

Ethical considerations:

The study proposal approved by the Ethical Committee of the Faculty of Nursing Helwan University. Official permission to conducted the study secured. Informed consent obtained from the Dean of the Faculty of Nursing a Fayoum University. Then oral consent gained from participants in the study sample. They were informed about the study aim and about their rights to refuse or withdraw at any time without giving reasons. Confidentiality of the obtained information assured. The study maneuvers did not entail any harmful effects on participants.

II- Operational design:

Preparatory phase:

This stage started from the first of December (2021) continued until the end of April (2022). In this phase the researcher reviewed the current available related literatures, materials, in textbooks, scientific journals and internet services were used for searching based on literatures review as the tools of data collection reviewed and translated into Arabic language.

Pilot study:

This stage started from the end of September (2022) continued until the end of October (2022). The aim of the pilot study explained to determine the applicability of the tools and the time needed for filling them as well as to test the clarity of the language used in the study tool. A pilot study conducted on (15) first grade students selected randomly; These subjects were excluded from the main study subjects. They represent 10% of study

subjects. Data obtained from the pilot study analyzed. The time for filling the study tool sheets ranged between (10-15) minutes.

Field work:

The data collection process started from the first of November (2022) continued until the end of April (2023). Data were collected 4 days / week with approximately (15-20) questionnaire sheets collected / day, approximately (50-60) sheets every week. Finally, pre data were collected with approximately within one month. Each questionnaire for completed required (10 to 15) minutes. The total number of the first grade students was initially (n=350), out of first grade students (n=110), were excluded by pilot study (n=14), sheets error (n=46), students not presented (n=50) and the final study sample number consisted of (n=240).

III- Administrative design:

An official letter from Faculty of Nursing of " Helwan University" to obtain permission to conducted the study submitted from the Dean of the Faculty Nursing of "Fayoum University" for first grade students. This letter included the aim of the study and photocopy from data collection tool in order to get the permission and help for collection of data. Oral consents obtained from participants.

IV-Statistical design:

Data entry and analysis were performed used SPSS statistical package version (25). Categorical variables were expressed as number and percentage, while continuous variables were expressed as (mean ±SD). "Chi-Square" (x2) were used to test the

association between row and column variable of qualitative data.

"ANOVA" test were used to compare mean in normally distributed quantitative variables in more than two groups. While "T independent test" used to compare mean in normally distributed quantitative variables in two groups. "Pearson correlation" were done to measure correlation between quantitative variables.

To find the effect of independent factors on dependent factor, so used the multiple linear regression analysis. For all tests a two-tailed p-value ≤ 0.05 were considered statistically significance, P-value ≤ 0.01 was considered highly statistically significance. While p-value > 0.05 was considered not significance. "Eta square" (η^2) used to measure the effect size. The referential framework for identifying the effect size for "ANOVA"-test value (Cognitive and Brain Science Unit, 2021) and (Lakens, 2013).

Result:

Table (2)Shows personal characteristics among the studiednursing studentsitshows that more than three-quarters (79.2%) of the age of the studied nursing students was ranged from 18 to 20 years old with a mean age of 18.32 ± 1.23 . Considering gender more than two-thirds (66.7%) of them were female with a male to female ratio were 0.5:1. Regarding placeofbirth and currentresidence more than four-fifths (83.3%) of them lived in the town area. Additionally, all (100%) of them were single holding a publicsecondaryschool certificate and didn't attended training courses.

Figure (1) Clarifies self-directed learning readiness during, pre and post & three months follow up among the studied nursing students. It denotes, more than three quarters (75.8%) and about two-thirds (73.8%) of the studied nursing students have high level of self-directed learning readiness duringpost & three months follow up test respectively. While only one-fifths (20.8%) of them perceived high level of self-directed learning readiness at a pre-test phase. In addition to presence of highly statistically significant difference at $\chi^2=190.3$, $P=0.000$.

Table (3) Illustrates mean score of total self-directed learning readiness during, pre and post & three months follow up among the studied nursing students. It denotes that during the phase of post-test, the studied nursing students gained higher mean score of total self-directed learning readiness (166.6 ± 36.3) followed by follow-up test (160.4 ± 34.66) as compared to phase of pre-test ($125.5 \pm$

33.26). In addition to presence of highly statistically significant difference at $F=97.5$, $P=0.000$.

Figure (2) Clarifies online learning engagement during, pre and post & three months follow up among the studied nursing students. It denotes, more than three quarters (78.3%) and about three quarters (75.4%) of the studied nursing students have high level of online learning engagement during post & three months follow up test respectively. While more than one-fifths (27.1%) of them perceived a high level of online learning engagement at a pre-test phase. In addition to presence of highly statistically significant difference at $\chi^2=166.2$, $P=0.000$.

Table (4) Illustrates mean score of total online learning engagement during, pre and post & three months follow up among the studied nursing students. It denotes that during the phase of post-test, the studied nursing students gained higher mean score of total online learning engagement (119.31 ± 26.9) followed by follow-up test (112.14 ± 24.6) as compared to phase of pre-test (93.41 ± 29.07). In addition to presence of highly statistically significant difference at $F=97.5$, $P=0.000$.

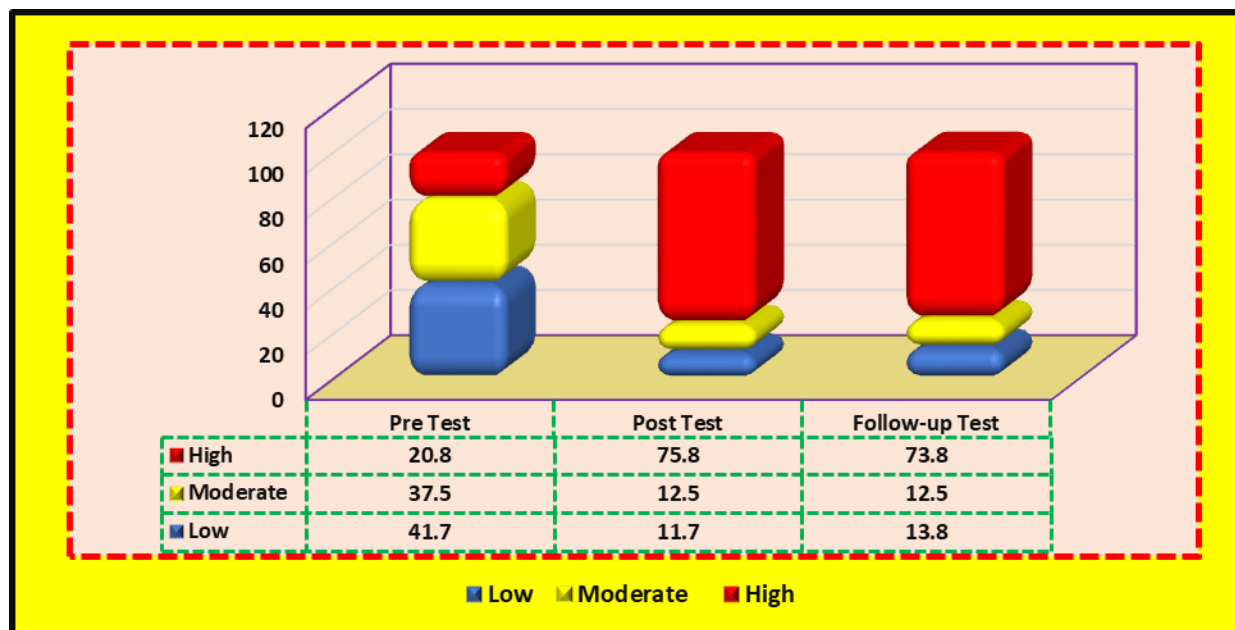
Table (5) Clarifies that, there was a highly statistically significant positive correlation between cumulative self-directed learning readiness, and online learning engagement during, pre and post & three months follow up among the studied nursing students at ($r = 0.990$ and $P= 0.000$).

Table (6)Linear regression analysis was conducted to empirically determine whether self-directed learning readiness was significant determinants of online learning engagement among the studied nursing students. Regression results in the previous table indicate the goodness of fit for the regression between of total self-directed learning readiness effect on online learning engagement, was excellence. Additionally, it indicates that self-directed learning readiness was responsible for (98%) of the variation in online learning engagement ($R^2 = 0.980$). Additionally, F statistic of (11514) indicated that the overall regression model was highly significant ($P = 0.000$). Moreover, regression coefficients of the independent variables (Total score of self-directed learning readiness). The results revealed that self-directed learning readiness is a positive predictor factor of online learning engagement among the studied nursing students. As $B = (0.760)$ indicates that the increase in self-directed learning readiness by one standardized point score associated with an increase in online learning engagement by (0.760) standardized point score.

Table (2): Frequency distribution of personal characteristics among the studied nursing students (n=240)

Personal characteristics		N	%
Age (year)	▪ 16 < 18	50	20.8
	▪ 18-20	190	79.2

	▪ Mean± SD	18.32 ± 1.23	
Gender	▪ Male	80	33.3
	▪ Female	160	66.7
	▪ Male to female ratio	0.5:1	
Placeofbirth	▪ Side	200	83.3
	▪ Town	40	16.7
Currentresidence	▪ Countryside	200	83.3
	▪ Town	40	16.7
MaritalStatutes	▪ Single	240	100.0
Type of secondary	▪ Publicsecondarieschool	240	100.0
Attending training courses	▪ No	240	100.0



χ²=190.3, P=0.000

Figure (1): Percentage distribution of self-directed learning readiness among the studied nursing .

Table (3): Mean score of total self-directed learning readiness during, pre and post & three months follow up among the studied nursing students (n=240)

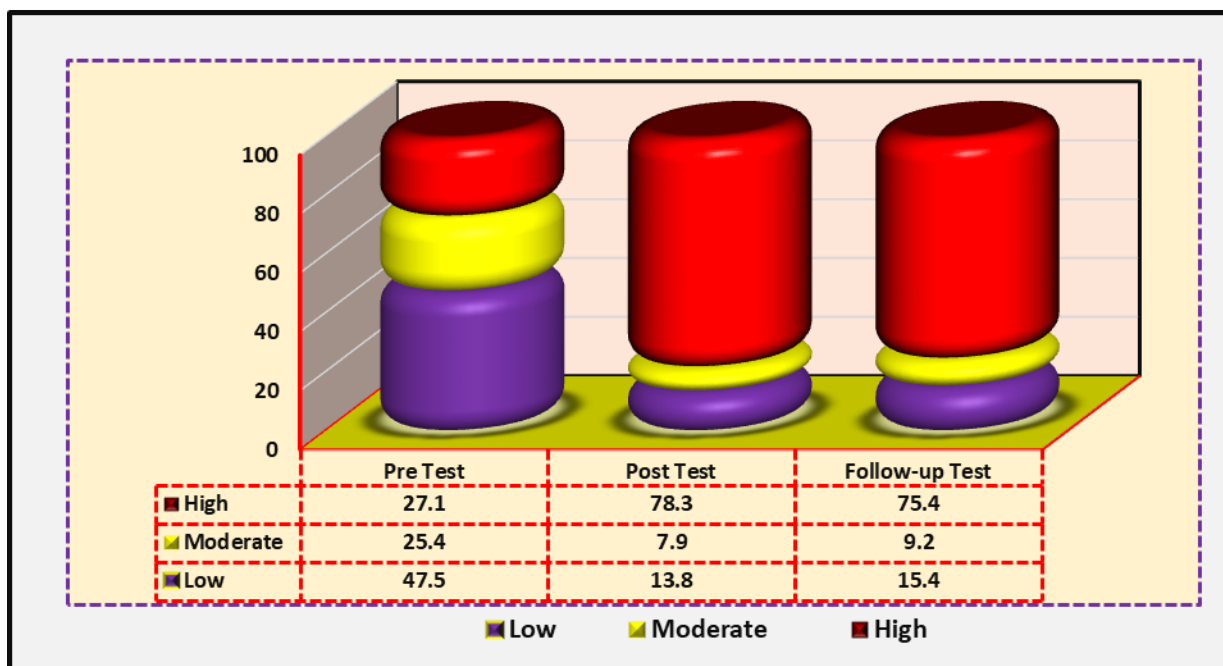
Items	Self-directed learning	Pre	Post	Follow up	F- test	P- Value
		$\bar{x} \pm SD$	$\bar{x} \pm SD$	$\bar{x} \pm SD$		
▪ Self-confidence	Low	10.46 ± 3.02	13.04 ± 1.50	13.22 ± 1.75	114.2	0.000**
	Moderate	19.0 ± 0.41	18.91 ± 1.30	19.16 ± 1.54		
	High	26.0 ± 1.75	26.82 ± 3.06	25.94 ± 2.86		
	Total	16.82 ± 6.78	24.27 ± 5.48	23.34 ± 5.26		
▪ Love of learning	Low	7.06 ± 1.01	6.52 ± 0.64	6.47 ± 0.62	53.8	0.000**
	Moderate	10.03 ± 0.65	9.37 ± 0.55	9.38 ± 0.55		

	High	13.0 ± 0.00	13.44 ± 1.50	12.99 ± 1.14		
	Total	9.85 ± 2.17	12.12 ± 2.76	11.66 ± 2.64		
▪ Positive orientation	Low	9.95 ± 2.16	11.12 ± 1.45	11.14 ± 1.50	98.2	0.000**
	Moderate	16.38 ± 0.99	15.66 ± 1.04	15.72 ± 1.13		
	High	21.88 ± 2.18	22.30 ± 2.52	21.57 ± 2.34		
	Total	15.47 ± 3.75	20.38 ± 4.41	19.65 ± 4.21		
▪ problem solving skills	Low	3.87 ± 0.422	4.47 ± 0.51	4.41 ± 0.50	475	0.000**
	Moderate	6.12 ± 0.32	6.16 ± 0.37	6.13 ± 0.33		
	High	8.0 ± 0.000	8.92 ± 0.99	8.62 ± 0.92		
	Total	4.41 ± 1.10	8.21 ± 1.69	7.90 ± 1.63		
▪ Creativity	Low	7.70 ± 0.57	7.11 ± 0.95	6.90 ± 0.97	71.3	0.000**
	Moderate	10.0 ± 0.61	9.97 ± 0.87	9.70 ± 0.79		
	High	12.2 ± 0.43	13.44 ± 1.50	12.96 ± 1.40		
	Total	10.02 ± 1.11	12.25 ± 2.59	11.82 ± 2.48		
▪ Initiative & independence	Low	18.83 ± 2.08	19.11 ± 3.05	18.87 ± 2.98	72.0	0.000**
	Moderate	27.63 ± 0.92	25.59 ± 1.78	25.38 ± 1.68		
	High	34.48 ± 2.04	35.77 ± 4.05	34.58 ± 3.80		
	Total	25.76 ± 6.18	32.59 ± 6.99	31.33 ± 6.69		
▪ Informed acceptance of responsibility	Low	13.48 ± 3.53	13.22 ± 1.60	13.39 ± 1.17	65.4	0.000**
	Moderate	20.29 ± 1.30	18.88 ± 1.23	19.09 ± 1.35		
	High	26.16 ± 1.44	26.87 ± 3.02	26.00 ± 2.83		
	Total	18.72 ± 6.22	24.27 ± 5.49	23.32 ± 5.26		
▪ Openness to learning opportunities	Low	18.15 ± 3.65	19.35 ± 2.97	19.17 ± 2.94	102	0.000**
	Moderate	26.73 ± 1.39	25.03 ± 1.42	25.07 ± 1.38		
	High	33.38 ± 2.23	35.72 ± 4.04	34.47 ± 3.80		
	Total	24.47 ± 6.83	32.66 ± 6.88	31.46 ± 6.55		
Total	Low	92.81 ± 17.11	95.36 ± 13.55	96.06 ± 14.35	97.5	0.000**
	Moderate	135.7 ± 7.39	131.4 ± 9.89	132.2 ± 10.51		
	High	172.5 ± 8.53	183.4 ± 20.69	177.2 ± 19.43		
	Total	125.5 ± 33.26	166.6 ± 36.3	160.4 ± 34.66		

*Significant $p \leq 0.05$

**Highly significant $p \leq 0.01$

F: ANOVA Test



$\chi^2=166.2, P=0.000$

Figure (2): Percentage distribution of online learning engagement among the studied nursing students.

Table (4): Mean score of total online learning engagement during, pre and post & three months follow up among the studied nursing students (n=240)

Items online learningengagement		No	%	Min	Max	$\bar{x} \pm SD$	F- test	P- Value
▪ Goal orientation	Low	63	26.3	7	14	11.92 ± 2.25	585	0.000**
	Moderate	100	41.7	15	18	15.53 ± 0.98		
	high	77	32.1	19	25	22.55 ± 2.40		
	Total	240	100.0	7	25	16.83 ± 4.59		
▪ Time and study environment	Low	91	37.9	6	17	12.01 ± 3.81	3672	0.000**
	Moderate	99	41.3	18	22	20.83 ± 1.53		
	high	50	20.8	24	30	26.22 ± 1.87		
	Total	240	100.0	6	30	18.61 ± 6.15		
▪ Self-regulation	Low	50	20.8	9	20	15.84 ± 3.32	557	0.000**
	Moderate	91	37.9	21	26	22.34 ± 1.96		
	high	99	41.3	27	35	31.48 ± 3.22		
	Total	240	100.0	9	35	24.76 ± 6.75		
▪ Web user self-efficacy	Low	127	52.9	12	32	23.72 ± 5.61	704	0.000**
	Moderate	47	19.6	34	41	35.49 ± 1.41		
	high	66	27.5	42	55	49.86 ± 3.89		
	Total	240	100.0	12		33.21 ± 12.10		
Total	Low	114	47.5	34	86	68.43 ± 14.96	580	0.000**
	Moderate	61	25.4	87	108	99.49 ± 5.80		
	high	65	27.1	109	145	131.5 ± 10.40		
	Total	240	100.0	34	145	93.41 ± 29.07		

Significant $p \leq 0.05$

**Highly significant $p \leq 0.01$

F: ANOVA Test

Table (5): Correlation matrix between cumulative self-directed learning readiness, and online learning engagement among the studied nursing students (n=240)

Items		self-directed learning readiness	learning engagement
Self-directed learning readiness	r		0.990
	p-value		0.000**
Online learning engagement	r	0.990	
	p-value	0.000**	

Significant $p \leq 0.05$

**Highly significant $p \leq 0.01$ r-Pearson Correlation Coefficient;

Cumulative: sum of the score of pre+ post+ follow up test

Table (6): Linear regression analysis of total self-directed learning readiness effect on online learning engagement among the studied nursing students (n=240)

Model	Unstandardized coefficients		standardized coefficients	T Test	P Value	r	R Square	F	P Value
	β	Std. Error	Beta						
Online learning engagement	0.760	0.007	0.990	107.3	0.000	0.990	0.980	11514	0.000**
a. Dependent variable: Total score of online learning engagement (sum of pre+ post + follow up score)									
b. predictors (constant): Total score of self-directed learning readinessengagement (sum of pre+ post + follow up score)									

Discussion

There seems to be a need for the new generation of undergraduate nursing students to use a mix of both innovative and conventional pedagogical strategies to better help them develop

their professional competence in this era of massive information-technological advancements and its corresponding proliferation of exponential knowledge. SDL a process in which people take charge of analyzing and identifying their learning

needs, setting learning goals, recognizing human, material educational resources, selecting and putting into practice appropriate learning strategies and evaluating learning outcomes whether with or without the help of others (*Garcia, 2021*).

The study result showed personal characteristics among the studied nursing students it confirmed that more than three-quarters of the age of the studied nursing students ranged from 18 to 20 years. Considering gender more than two-thirds of them were female. Regarding place of birth and current residence more than four-fifths of them lived in the town area. Additionally, all of them were single, holding a public secondary school certificate and didn't attend training courses.

Moreover, the study findings were consistent with the study result done by (*Garcia, 2021*) who studied "the influence of self-directed learning skills on the academic adjustment in an online learning platform among level I and II student nurse" revealed that most of the student nurse respondents were females. It goes to show that nursing remains to be a males dominant course.

On other side the study finding was disharmony with the study result published at International Journal of Educational Technology in Higher Education conducted by (*Geng , 2019*) who Investigating "self-directed learning and technology readiness in blending learning environment" reported that the majority of the studied sample were males and they were older than 20 years old.

Regarding self-directed learning readiness during, pre and post & three months follow up among the studied nursing students. It denotes, more than three quarters and about two-thirds of the studied nursing students have high level of self-directed learning readiness during post & three months follow up test respectively. While only one-fifths of them perceived high level of self-directed learning readiness at a pre-test phase. In addition to presence of highly statistically significant difference.

The same direction with the study result published at International Conference on Computer Supported Education by (*Laine, 2021*) Who " Investigated raising awareness of students' self-directed learning readiness" reported a high level of self-directed learning readiness at a pre-test phase. In addition to presence of highly statistically significant difference. Moreover, this data was inconsistent with the study result conducted in Saudi Arabia by (*Dogham, 2022*) who "Evaluated self-directed learning readiness and online learning self-efficacy among undergraduate nursing students" concluded that the two thirds of students' SDL readiness ranges between the average and above the average

Regarding to illustrates mean score of total self-directed learning readiness . Denotes the phase of post-test(166.6 ± 36.3) followed by follow-up test (160.4 ± 34.66), the studied nursing students gained higher mean score of total self-directed learning readiness as compared to phase of pre-test($125.5 \pm$

33.26).In addition to presence of highly statistically significant difference. This may be as a result presence of discrimination of self-directed learning . On the other hand shift from teacher-centered learning to student-centered learning appears highly concentrated in memory.

As well this finding was on the same direction with the study result published at "International Conference on Computer Supported Education" by (*Laine, 2021*) who investigated raising awareness of students' self-directed learning readiness (SDLR) described that the studied students had a low level of self-directed learning readiness before applying the program of raising awareness of students regarding SDLR.

On other hand this finding was incongruent with the study result conducted in Ethiopian by (*Kidane, 2020*) which studied "students' perceptions towards self-directed learning medical schools with new innovative curriculum": A mixed-method study illustrated that the studied students showed a significant slightly increase in SDL score.

Concerning to online learning engagement during, pre and post and follow up among the studied nursing students. It denotes, more than three quarters of the studied nursing students have high level of online learning engagement during post, After three months respectively about three quarters at follow up test. While more than one-fifths of them perceived a high level of online learning engagement at a pre-test phase. In addition to presence of highly statistically significant difference.From the researcher point of view this may be due to the presence of inadequate support too challenging E- learning materials, lack of motivation and limited technology experience.

This result is consistent with (*Richard, 2020*)who studied "Self-regulated learning in online learning environments: strategies for remote learning" Stated that the students showed more than two thirds toward online learning engagement.This result inconsistent with (*Raed, 2018*) who studied "The effect of gamification on motivation and engagement " Stated presence of low statistically significance difference toward motivation and engagement.

Regarding that the mean score of total online learning engagement during, pre and post & three months follow up among the studied nursing students. It denotes that during the phase of post-test, the studied nursing students gained higher mean score of total online learning engagement followed by follow-up test as compared to phase of pre-test. In addition to presence of highly statistically significant difference.From the researcher point of view, this may be due to that self-directed learning and online learning engagement share a number of similar traits or characteristics, such as setting clear goals for themselves, open to learning, being curious and being willing to learn.

This finding is in similar to (*Brittany, 2020*) who studied "Examining Students' Confidence to Learn Online, Self-Regulation Skills, Perceptions of Satisfaction and Usefulness of Online Classes" and stated that the mean higher mean score of total score of confidence to learn online, self-regulation skills, perceptions of satisfaction. This result is in different with (*Shaneil, 2020*) who studied "Students Perception on the Level of Classroom Engagement at a Korean University" Stated that finding low statistically significance difference toward Perception on the Level of Classroom Engagement.

There was a highly statistically significant positive correlation between cumulative self-directed learning readiness, and online learning engagement during, pre and post & three months follow up among the studied nursing students. From the researcher point of view this may be due to desire of the students' and readiness to learn and acquire information were barefoot in searching for different ways to gain there goal, which prompted them to learning engagement.

The study findings were on the same direction with the study results conducted by (*Geng, 2019*) which investigated "self-directed learning and technology readiness in blending learning environment implied that students" who were more self-directed and with active attitudes toward technology-based products were more motivated in adopting online learning strategies and achieving their learning goals. concluded that there was a highly statistically significant positive correlation between self-directed learning readiness and online learning self-efficacy.

On opposite side, this finding was disagreed with the study result carried out by (*Tsai, 2020*) which "evaluated applying online competency-based learning and design-based learning to enhance the development of students' skills in using PowerPoint and Word, self-directed learning readiness and experience of online learning". It illustrated that students did not have significantly better SDLR or experience of online learning.

In relation of the linear regression analysis was conducted to empirically determine whether self-directed learning readiness was significant determinants of online learning engagement among the studied nursing students. Regression results indicate the goodness of fit for the regression between of total self-directed learning readiness effect on online learning engagement, was excellence. Additionally, it indicates that self-directed learning readiness was responsible for the variation in online learning engagement.

Additionally, F test result statistic indicated that the overall regression model was highly significant. Moreover, regression coefficients of the independent variables total score of self-directed learning readiness. The results revealed that self-directed learning readiness is a positive predictor factor of online learning engagement among the studied nursing students. As β test result indicates

that the increase in self-directed learning readiness by one standardized point score associated with an increase in online learning engagement standardized point score. From the researcher point of view this may be due to desire of the students' and readiness to learn and acquire information were barefoot in searching for different ways to gain there goal, which prompted them to learning engagement.

The study finding was in the same direction with the study result conducted by (*Karataş&Arpacı, 2021*) who studied thesis "entitled the role of self-directed learning, metacognition and 21st century skills predicting the readiness for online learning" concluded that self-directed learning readiness are a strong positive predictor of online learning engagement. On opposite side, this finding was disagreed with the study result carried out by (*Tsai, 2020*) which "evaluated applying online competency-based learning and design-based learning to enhance the development of students' skills in using PowerPoint and Word, self-directed learning readiness and experience of online learning". It illustrated that students did not have wake positive predictor of online learning engagement.

Conclusion

In the light of the present study results it can be concluded that:

Only one-fifths of the studied nursing students had a low level of self-directed learning readiness followed by about two-thirds of the studied nursing students had a moderate level of self-directed learning readiness, while more than three-quarter studied nursing students had a high level of self-directed learning readiness. Additionally, it denoted more than one-half of the studied nursing students had a low level of online learning engagement followed by three-quarter of them had a moderate level, while more than three-quarter studied nursing students had a high level of online learning engagement. Moreover, There was a highly statistically significant positive correlation between self-directed learning readiness and online learning engagement among the studied nursing students.

Recommendations:

Self-Directed Learning Readiness and Online Learning Engagement

At nursing personnel level:

- Conduct an orientation session for freshly graduating nurses at the start of their job to enlighten them about the importance of self-directed learning readiness and online engagement for the learning process.
- Develop continuous in-service training workshop about online engagement to promote nursing personal continues learning.

➤ At the organizational level:

- Raise awareness of the nursing personnel regarding the importance of self-directed

learning readiness and online engagement for the learning process.

- Repeat the study on a larger sample and different geographical areas were recommended for generalization of findings.

➤ **At the educational level:**

- Increase the number of online courses and use motivational strategies to get the students engaged in online learning.
- Apply online learning in the first year to take advantages of fresh student readiness. Then proceed with the application of online learning in the second, third and fourth year.
- Establish availability and accessibility of computers and internet in the faculty are mandatory to guarantee full activation of online learning by all students especially those who have little access to internet.
- Design nursing curricula which encourage nursing students' self-directed learning readiness that were required for academic achievement motivation and enhancement.

➤ **At the research level:**

- Further studies show that self-directed learning readiness are a predictable variable for online engagement.

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