

## Laboratory Class Engagement among Nursing Students: A Comparative Cross Sectional Study

Farida Mahmoud Hassona<sup>1,2</sup>, Salwa Abd El Gawad Sallam<sup>2,3</sup>, Fredezwindia Tammang Madjid<sup>2</sup>,  
Carina Del Rosario Hussein<sup>2</sup>, Reynita Biong Saguban<sup>2</sup> and Amal Mohammed AlKhatib<sup>2</sup>

<sup>1</sup>Faculty of Nursing, Zagazig University, Egypt

<sup>2</sup>Faculty of Nursing, Hail University, Kingdom of Saudi Arabia (KSA)

<sup>3</sup>Faculty of Nursing, Menoufia University, Egypt

**KEYWORDS** Nursing Students. Interest. Motivation. Laboratory Activities. Engagement. Cognitive Skill

**ABSTRACT** This study aimed to assess the laboratory class engagement level among nursing students in a four dimensions (that is, engagement activities, cognitive skills, other educational practices, and class atmosphere) and its difference with the demographic profile of the students. This research employed a comparative-cross sectional study design. The research was conducted in the College of Nursing, University of Hail in the Kingdom of Saudi Arabia during the academic year 2018-2019. There were 136 nursing students that participated in this study because of the convenience sampling. This study was conducted from January to February 2019. The participants have a high level of engagement activities (2.65), cognitive skills (3.07), other educational practices (2.92), and classroom atmosphere (2.72). There is no significant relation between laboratory class engagements with age ( $p>0.054$ ), academic year ( $p>0.382$ ), previous education ( $p>0.895$ ), gender ( $p>0.297$ ), and reason for enrolment ( $p>0.313$ ). Nursing students who enrolled in the fundamental of nursing practical course were highly engaged. The age, academic year, previous education, gender and reason for enrolment were not significant to the students' engagement. The nursing educator played a major role for the students to reach their highest achievement in the attainment of their goal to meet the expectation of every nursing school towards mission vision.

### INTRODUCTION

The need to develop the students' engagement in their studies (Hudson and Carrasco 2017) is of paramount importance to translate in the clinical environment. While it is a vital element of the learning process, engagement can result students to commit into a more meaningful learning. Student engagement is an involvement in activities and conditions that link with high-quality learning (De Villiers and Werner 2018), however, from an educational perspective the students' engagement to learning is a meta-construct, which involves the emotion, behaviour and cognitive aspects (Fong et al. 2019). The emotional engagement relates to student identification and the sense of attachments to school (Voelkl 2012), the behavioural engagement refers to how the student participates and involves in activities (Fredricks et al. 2004), and the cognitive represents students' point of endeavour in learning processes (Wang and Fredricks 2014). In this current study, the researchers will explore the four dimensions (that is, engagement activities, cognitive skills, other educational practices, and classroom atmosphere) (Ouimet and Smallwood 2005).

The students who were engaged to learning take action to achieve certain purposes. This makes academic progress, satisfying students' motivations, and creating motivationally supportive learning environments (Reeve et al. 2019). Evidence suggests that adult learners with low engagement show risky behaviours and eventually drop out from school (Wang and Fredricks 2014). It is in this context that the provision of autonomy from their teachers is essential. This satisfies the demonstrative need for independence, and engagement throughout classroom instruction, and eventually it becomes productive and beneficial (Núñez and León 2019). As stated in Palo et al.'s (2019) study, the high academic grades can be regarded as a precedent for high student participation and low student burnout. Tight (2020) mentioned that the more engaged a student is, the less likely they are to voluntarily leave higher education. As such, this is possible, as they have completed their studies, with their higher education and the institution from which they obtain it. Moreover, Bukhari et al. (2019) added that in addition to the academic skills acquired, student involvement would help them develop additional extracurricular skills that could also enhance university performance.

While students pay more attention and engage in debates in the classroom, they exchange ideas, make efforts in classroom events, and demonstrate an interest in learning and asking questions and motivation (Havik and Westergård 2020). To Abd Alla et al. (2016), another activity is the collaboration with others where problem solving is done creatively. Indeed, there is a need for the students to engage in such activities as part of their learning outcomes. Engagement is a predictor of student learning, high moral and personal development, and overall satisfaction (Singh 2020) and this serves to measure success of a quality nursing program (Hudson and Carrasco 2017). Conversely, in a laboratory context, Loveys and Riggs (2019) argue that students often attend laboratory class with no appreciation of what they are going to learn in the laboratory. In this context, the participation of students in laboratory classes is very necessary. In fact, the foundation of nursing training was clinical encounters as they equip nursing students with the requisite learning opportunities to practice nursing skills and consolidate expertise in real-life environments (AlMekki and El Khalil 2020).

Given the positive perspective and outcomes of students' engagement, it is unclear whether the level of engagement in the classroom is similar to laboratory class. Indeed, laboratory class needs more learners to be more engaged, as it is the transition of applying the theory to practice. While engagement is an important educational construct in higher education due to its positive relationships, different variables may affect it such as demographic characteristics of the students. To the best knowledge of the researchers, this study was not explored in Saudi Arabia. To meet the needs of students and to avoid emotional exhaustion, teachers should design an optimal learning environment. To this end, as a primary contributor to learning performance, studying the level of commitment of students in the classroom is critical for nursing educators.

### **Objectives**

The aim of this study is to assess the laboratory class engagement level among the nursing students in a four dimensions (that is, engagement activities, cognitive skills, other education-

al practices, and class atmosphere) and its difference with the demographic profile of the students.

## **METHODOLOGY**

### **Research Design**

This research employed a quantitative and comparative cross sectional study design.

### **Setting**

The research was conducted in the College of Nursing, University of Hail in Kingdom of Saudi Arabia during the academic year 2018-2019.

### **Participants**

The study participants were the 136 nursing students who were enrolled in the Fundamentals of Nursing practice course during the first semester of 2018-2019.

### **Sampling**

Convenience sampling was used resulting in 136 male and female nursing students. Excluded were those who were not willing to participate and absent during the conduct of the study.

### **Instrument**

The classroom survey of student engagement was used in this study (Ouimet and Smallwood 2005) with the permission of the original tool developers. The tool consists of two parts. The first part is the demographic characteristics of students, which include the age, academic year, previous education, gender, and reason for enrolment. The second part consists of 37 items with the four dimensions. This includes the engagement activities with 19 items, cognitive skills with 5 items, other educational practices with 8 items, and classroom atmosphere with 4 items. Nursing students' responses were measured on a four-point Likert scale resulting in ordinal data. The classroom engagement was considered Very Low if the score ranged from 1.00 to 1.50, Low if the score ranged from 1.51 to 2.50, High if the score ranged from 2.51 to 3.50, and Very High if the score ranged from 3.51 to 4.00.

The original developers of the tool showed evidenced high internal consistency for each subscale of the engagement activities (0.826), cognitive skills (0.733), other educational practices (0.813), and classroom (0.775), all of which are highly reliable. A pilot study was conducted with the 15 nursing students from different sections. The students were selected randomly, and the results of pilot sample were excluded from the results. Cronbach’s alpha value was 0.832 for the total scale indicating high reliability of the tool.

**Data Gathering Procedure**

The survey questionnaire sheet was personally handed to students in their study setting by the researchers. They were filled in at the time of distribution. Questionnaire sheet contents were explained to the participants and ways to fill in the sheet. The questionnaires were completed at the same time of distribution. The researchers check each questionnaire sheet after being completed to ensure the completion of all information. The researcher collected data, which started from January to February 2019. Consent was established with the completion of the questionnaires. Out of 150 surveys distributed to second-year nursing students, 136 surveys were completed, yielding an overall response rate of ninety percent.

**Ethical Considerations**

This research has the approval of the Institutional Review Board of the University of Hail (H-2016-045). The participants were informed that their participation in the study was voluntary and there was no harm if they choose not to participate. Participants were assured that no individual information would be shared with faculty or others.

**Statistical Analysis**

The data were organised, categorised, tabulated and statistically analysed by using SPSS, (Statistical Package for Social Sciences), software program version 20. Data were presented using descriptive statistics in the form of frequency, percentage, the mean and standard deviation, and t-test was used to determine the differences be-

tween the study variables. A significant level value was set at  $p < 0.05$ .

**RESULTS**

A majority of the sample belonged to age range of 20-22 years old (66.2%). For the academic year, there is an equal percentage to both level three and level four (50%). At least 9.2 percent of the sample comprised regular student belonging to the preparatory course while 7.4 percent for diploma. Most of the participants were female (63.2%) and their reason to enrol in nursing was their own desire (70.6%) (Table 1).

**Table 1: Demographic characteristics of the nursing students**

Profile	No.	%
Age	17 – 19	46 33.8
	20 – 22	90 66.2
<b>Total</b>	<b>136</b>	<b>100</b>
Academic Year	Level 3	68 50
	Level 4	68 50
<b>Total</b>	<b>136</b>	<b>100</b>
Previous Education	Preparatory	126 92.6
	Diploma	10 7.4
<b>Total</b>	<b>136</b>	<b>100</b>
Gender	Male	50 36.8
	Female	86 63.2
<b>Total</b>	<b>136</b>	<b>100</b>
Reason for Enrolment	Grade	40 29.4
	Desire	96 70.6
<b>Total</b>	<b>136</b>	<b>100</b>

Table 2 shows the high level of laboratory class engagement of the participants. This includes engagement activities (2.65), cognitive skills (3.07), other educational practices (2.92), and classroom atmosphere (2.72).

**Table 2: Level of laboratory class engagement of the respondents**

Items	Mean response	SD	Remarks
Engagement activities	2.65	0.55	High
Cognitive skills	3.07	0.65	High
Other educational practices	2.92	0.58	High
Classroom atmosphere	2.72	0.46	High
Overall Grand Mean	2.84	0.33	High

Table 3 showed the differences between laboratory class engagement of the respondents and their profile. There is no significant relation be-

tween laboratory class engagement with age ( $p>0.054$ ), academic year ( $p>0.382$ ), previous education ( $p>0.895$ ), gender ( $p>0.297$ ), and reason for enrolment ( $p>0.313$ ).

### DISCUSSION

The aim of this study is to assess laboratory class engagements level among the nursing students using four dimensions (that is, engagement activities, cognitive skills, other educational practices, and class atmosphere) and its difference with the demographic profile of the students. Overall, the nursing students in this study revealed high engagement level. This is an important parameter for advancement of students in looking for and obtaining quality nursing education that provides them with a well-rounded, reliable and productive career in their chosen field (Hart et al. 2011). This finding may be attributed to the fact that teachers adapt curricular material in the basic course to concentrate on subjects that are important to the training stage and make it engaging for the students. This result coincides with the research by Maguire et al. (2017), where students reported high levels of interest in educational engagement. Researchers like Baik et al. (2015) offer an overview of patterns in the perceptions and perspectives of first-year students at Australian universities over a twenty-year period and concluded that most students are very concerned with their courses. This present study, on the other hand, disagrees with Abd Alla et al. (2016), where most of students had an average level of classroom engagement. This current result indicates that nursing students have the willingness to exert effort to understand

the content, focus on tasks, and find the fundamental course engaging.

This research found that the engagement activities are high. In the previous study, the engagement activities with the use of electronic mediums (chat group, internet, instant messaging) were found highly engaging (Schmitt et al. 2012). The social media is a medium that will enable nursing instructors to help students develop a deeper understanding of teamwork, professionalism, health policy, and ethics (Schmitt et al. 2012). In this study, it must take into account that online learning continues to equip students to further their skills. This is because of the exponential evolution of clinical care technologies that ensures the future nurses to adapt to the technology. Indeed, nurses of the next generation must be specialists in health technology who deliver healthy high quality, technology-infused patient care and are able to access specific, current knowledge at the point of care (Glasgow et al. 2017). Moreover, the high perception of the participants on the cognitive skills dimension indicates that students developed learning strategies. Alshammari et al. (2019) suggest that in order for the learners to achieve the cognitive skills, learning strategies must be put in context. Previous research reported that students adapted a variety of strategies such as memorisation and mnemonics in order to remember technical terms and key concepts in their study (Irvin et al. 2007). Moreover, the learning experiences are of paramount importance for the nursing students in order to advance their cognitive skills (Alsayed et al. 2020). It is believed that environmental, interpersonal and teaching- learning factors are influential to their learning experiences (Alshammari et al. 2020).

**Table 3: Differences between laboratory class engagement of the respondents and their profile**

<i>Profile</i>		<i>Mean response</i>	<i>t-value</i>	<i>P-value</i>	<i>Remarks</i>
<i>Age</i>	17 – 19	2.91	1.944	0.054	Not significant
	20 - 22	2.80			
<i>Academic Year</i>	Level 3	2.86	0.877	0.382	Not significant
	Level 4	2.81			
<i>Previous Education</i>	Preparatory	2.84	-0.132	0.895	Not significant
	Diploma	2.85			
<i>Gender</i>	Male	2.80	-01.047	0.297	Not significant
	Female	2.86			
<i>Reason for Enrolment to the Faculty</i>	Grade	2.88	1.014	0.313	Not significant
	Desire	2.82			

Indeed, these factors are very significant to consider in order for the students to thrive in their skills and experiences towards a well-prepared professional nurse.

The high score for other educational activities suggests that interest is a strong motivational process that energises learning, leads academic and career pathways and is necessary for academic achievement (Harackiewicz et al. 2016). However, irrespective of the objective importance of an action or subject, students will not be motivated to invest effort if they do not understand its value (Carnegie Mellon University 2020). Likewise, the participants earned a high score in the classroom environment factor. The classroom activities are explicitly designed for the students to work with other students. As such, the team-based activities are of the useful way of involving the students to work with their interaction and communication skills. Team-based learning gives the ability to practice essential teamwork skills and to fine-tune interactions (Hudson 2015). Compared with individual learning, team based learning promotes more experience satisfaction, quality of learning, critical reasoning skills and professional development. The greater ability to learn within a team fits the demands of today's educational setting. Indeed, this will improve professional practice quality and safety (Currey et al. 2015). This present result must be taken into account that nursing educators play a major role in multiple interventions to enhance any student's focus on their goal.

This study found no significant relation between laboratory class engagement and students' age, academic year, previous education, gender, or reason for enrolment to the faculty. The results can be credited to the fact that students are committed with the learning outcomes as defined in the course. This result agrees with Abd Alla et al. (2016) who reported no statistically significant relation between classroom engagement and students' sex and pre-education before enrolment to the faculty. These current findings contribute to the understanding of the nursing educators in looking at the aspects of their teaching practice. This requires attention to the learning environment of students that motivates students with respect to their active involvement in lectures and application of laboratory skills.

## CONCLUSION

The age, academic year, previous education, gender and reason for enrolment were not significant to students' engagement. The nursing educator played a major role for the students to reach their highest achievement in the attainment of their goal to meet the expectation of every nursing school towards mission vision. This is the challenge for every nursing educator to address the gap between theoretical and the laboratory practice. These results of the study can be considered a benchmark and a tool for improvement towards a quality laboratory nursing program needed at every level and across all settings.

## RECOMMENDATIONS

While students in this study were highly engaged in their laboratory activities, it is further recommended that nurse educators compliment it with other measures (like reflection and learning experiences of the students). Such measures will also look into the effectiveness of the curriculum or course.

## ACKNOWLEDGMENTS

The authors would like to extend their gratitude to all the nursing students who participated in the study.

## REFERENCES

- Abd Alla HMH, Hassan RM, Hassona FM 2016. *Relationship between Motivational Strategies and Nursing Student Classroom Engagement in Faculty of Nursing*. Master Thesis, Unpublished. Egypt: Faculty of Nursing, Zagazig University.
- AlMekkawi M, El Khalil R 2020. New graduate nurses' readiness to practice: A narrative literature review. *Health Professions Education*, 6(3): 304-316. <https://doi.org/10.1016/j.hpe.2020.05.008>.
- Alsayed S, Alshammari F, Pasay-an E, Dator WL 2020. Investigating the learning approaches of students in nursing education. *Journal of Taibah University Medical Sciences*, (In press). <https://doi.org/10.1016/j.jtumed.2020.10.008>.
- Alshammari MH, Pacheco H, Alboliteeh M, Pasay-an E, Albagawi B, Aslhamamri F 2019. Faculty teaching styles and the learning preference among Nursing students: A self-reported study. *University of Ha'il-Journal of Science*, 1(1): 19-27.
- Alshammari F, Saguban R, Hussein- Del Rosarion C, Madjid-Tammang F, Pasay-an E, Ali AlAbd A, Mousa

- NS 2020. Factors influencing the clinical learning experience of student nurses in Hail Region, Kingdom of Saudi Arabia. *International Journal of Advanced and Applied Sciences*, 7(8): 49-54.
- Baik C, Naylor R, Arkoudis S 2015. *The ūrst Year Experience in Australian Universities: Findings From Two Decades, 1994–2014*. Melbourne, Australia: Melbourne Centre for the Study of Higher Education, the University of Melbourne.
- Bukhari YR, Bin Abdulrahman AK, AlShammari AA, Almuzayrie AF, Al Zahrani WM, AlSabbagh MO, Bin Abdulrahman KA 2019. Perceptions of medical students regarding excellence in student engagement: A multi-center Saudi Arabian perspective. *Advances in Medical Education and Practice*, 10: 849-854. <http://doi.org/10.2147/AMEP.S211797>.
- Carnegie Mellon University 2020. Explore Strategies - Eberly Center - Carnegie Mellon University. From <[https://www.cmu.edu/teaching/solveproblem/strat-lackmotivation/lackmotivation\\_01.html](https://www.cmu.edu/teaching/solveproblem/strat-lackmotivation/lackmotivation_01.html)> (Retrieved on 14 July 2020).
- Currey J, Eustace P, Oldland E, Glanville D, Story I 2015. Developing professional attributes in critical care nurses using Team-Based Learning. *Nurse Educ Pract*, 15(3): 232-238. <http://doi:10.1016/j.nepr.2015.01.011>.
- De Villiers B, Werner A 2018. The relationship between student engagement and academic success. *Journal for New Generation Sciences*, 14(1): 36-50.
- Fredricks JA, Blumenfeld PC, Paris AH 2004. School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74(1): 59-109. [http://dx.doi.org/10.3102/003465430740\\_01059](http://dx.doi.org/10.3102/003465430740_01059).
- Glasgow ME, Lockhart J, Nolfi DA 2017. Online nursing education: Virtual classrooms and clinical simulations help meet student needs. *Health Progress*, 46-51.
- Hart S, Stewart K 2011. The Student Engagement in School Questionnaire (SESQ) and Teachers Engagement Report Form- New (TERF-N): Examining the preliminary evidence. *Contemporary School Psychiatry*, 15: 67–79. <https://doi.org/10.1007/BF03340964>.
- Harackiewicz JM, Smith JL, Priniski SJ 2016. Interest matters: The importance of promoting interest in education. *Policy Insights from the Behavioral and Brain Sciences*, 3(2): 220–227. <https://doi.org/10.1177/2372732216655542>.
- Havik T, Westergård E 2020. Do teachers matter? Students' perceptions of classroom interactions and student engagement. *Scandinavian Journal of Educational Research*, 64(4): 488–507. <https://doi.org/10.1080/00313831.2019.1577754>.
- Hudson K, Carrasco R 2015. Researching nursing students' engagement: Successful findings for nursing. *Int J Nurs Clin Pract*, 2: 150. [http://dx.doi.org/10.15344/2394\\_4978/2015/150](http://dx.doi.org/10.15344/2394_4978/2015/150).
- Hudson K, Carrasco R 2017. Nursing student engagement: Taking a closer look. *Open Journal of Nursing*, 7: 193-201. <https://doi.org/10.4236/ojn.2017.72017>.
- Irvin J, Meltzer J, Dukes M 2007. Taking Action on Adolescent Literacy. From <<http://www.ascd.org/publications/books/107034/chapters/Student-Motivation,Engagement,-and-Achievement.aspx>> (Retrieved on 23 November 2020).
- Loveys BR, Riggs KM 2019. Flipping the laboratory: Improving student engagement and learning outcomes in second year science courses. *International Journal of Science Education*, 41(1): 64-79. <https://doi.org/10.1080/09500693.2018.1533663>.
- Maguire R, Egan A, Hyland P, Maguire P 2017. Engaging students emotionally: The role of emotional intelligence in predicting cognitive and affective engagement in higher education. *Higher Education Research and Development*, 36(2): 343-357. <https://doi.org/10.1080/07294360.2016.1185396>.
- Núñez JL, León J 2019. Determinants of classroom engagement: a prospective test based on self-determination theory. *Teachers and Teaching*, 25(2): 147-159. <https://doi.org/10.1080/13540602.2018.1542297>.
- Palo' R, Laurenþiu P, Maricuþoiu Costea I 2019. Relations between academic performance, student engagement and student burnout: A cross-lagged analysis of a two wave study. *Studies in Educational Evaluation*, 60: 199-204. <https://doi.org/10.1016/j.stueduc.2019.01.005>.
- Quimet J, Smallwood R 2005. Assessment measures, CLASSE, the class level survey of student engagement. *Assessment Update*, 17(6): 13-18.
- Reeve J, Cheon, SH, Jang H-R 2019. Teacher-focused interventions to enhance students' classroom engagement. In: J Fredricks, S Christenson, AL Reschly (Eds.): *Handbook of Student Engagement Interventions: Working with Disengaged Youth*. New Jersey: Elsevier, pp. 87-102.
- Riverside City College 2013. Riverside City College School of Nursing. From <<https://www.rcc.edu/departments/schoolofnursing/Pages/Expectations.aspx>> (Retrieved 15 July 2020).
- Singh A 2020. A confirmatory factor analysis of student engagement at the University of Hail, Saudi Arabia. *Amazonia Investiga*, 9(26): 181-190. <http://www.amazoniainvestiga.info>.
- Schmitt T, Sims-Giddens S, Booth R 2012. Social media use in nursing education. *OJIN: The Online Journal of Issues in Nursing*, 17(3): 2. <https://doi.org/10.3912/OJIN.Vol17No03Man02>.
- Tight M 2020. Student retention and engagement in higher education. *Journal of Further and Higher Education*, 44(5): 689-704. <https://doi.org/10.1080/0309877X.2019.1576860>.
- Voelkl KE 2012. School identification. In: SL Christenson, AL Reschly, C Wylie (Eds.): *Handbook of Research on Student Engagement*. New York: Springer, pp.193–218.
- Wang MT, Fredricks JA 2014. The reciprocal links between school engagement, youth problem behaviors, and school dropout during adolescence. *Child Development*, 85(2): 722-737. <http://dx.doi.org/10.1111/cdev.12138>.

**Paper received for publication in November, 2020**  
**Paper accepted for publication in December, 2020**