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RESEARCH ARTICLE

RESHAPING UNDERGRADUATES' RESEARCH EXPERIENCE WITH STATION ROTATION LEARNING MODEL.

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Abstract

Research skills have been identified as one of the essential 21st century skills which undergraduates should develop due to their direct relation to the development and prosperity of an individual and of the nation as a whole. However, undergraduates tend to have a negative experience towards the scientific process of conducting a research. They perceive research tasks as boring, difficult to understand and apply as well as irrelevant to their daily life. Thus, they reach their final major year with limited experience in research writing as a result of lack of sufficient workshops or motivating activities on research writing. One way that helps in motivating undergraduates towards the research process and in developing their research skills is in creating a kinesthetic learning environment based on Station Rotation Blended Learning Model (SRLM). Hence, the following research paper aims to investigate the impact of SRLM on the attitude and research writing proficiency of 55 EFL participants in the English communication course. For this purpose, a quantitative research study was conducted. Findings revealed that SRLM helps students develop not only a positive attitude towards research but also a proficiency in research writing. Hence, it is highly recommended to adopt SRLM with undergraduates at an early stage of their major for the cognitive and non-cognitive skills they tend to develop.

Introduction:-

One reason behind the development and prosperity of nations is being aware of the significance of research in shaping the world. Because of research, man has opened new frontiers and made a leap towards the future (Oguan Jr., Bernal, Pinca, 2014; Siamian, Mahmoudi, Habibi, Latifi, & Zare-Gavgani, 2016). In fact, the impact of research in shaping the future of countries has made it one of the 21st century required skills. Learners need such a transferable skill to get ready for tackling real world issues inside and outside the workplace. From here comes the important role of universities in emphasizing and developing students' research skills at all levels. When students are engaged with the research process, they are contributing a new truth and giving the learning experience a new value.

Research projects based on hypothesis-driven scientific method provides opportunities for learners to become responsible individuals with integrity and competence in their fields. Dealing with ill-structured problems, undergraduates get involved with disciplinary practice through which they "expect and tackle the real-world

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challenges of the research process as it is to set expectations about outcomes" ("How to Engage Undergraduates in Research", 2018, para.1) They develop into independent critical thinkers who have enough confidence to evaluate evidence, integrate theory into practice, propose solutions and argue for or against their claims and decisions. Hence, undergraduate research opportunities are valuable for society at large since highly skilled professions demand graduates with leadership skills who know how to make decisions independently, collaborate, innovate, and communicate professionally (Petrella & Jung, 2008). That's why we as scholars should continue to improve our quality of instruction and to explore new motivating and effective learning models that enrich our learners' research experience.

However, for many undergraduates, the research process is complex, tedious, and stressful (Badke, 2019; Oguan Jr. et al., 2014; Shaukat, Siddiquah, Abiodullah, & Akbar, 2014).They perceive research tasks as boring and irrelevant to their daily life (Aschbacher, Li, & Roth, 2010). They find it difficult to understand the concept behind research and the potential impact it has on their professional life. As a result, students end up with poor basic research skills ranging from formulating a clear and concise research problem statement to setting a detailed organized plan for investigation, evaluating secondary resources, drawing conclusions and recommendation, paraphrasing, citing, and referencing (Patak & Naim, 2012; Shaukat et al., 2014).

Students' anxiety towards research has been experienced by the researcher who teaches communication courses that aim to develop students' persuasive writing proficiency and research skills. In such courses, she strives to create a comfortable and motivating research environment that helps undergraduates develop a positive attitude towards research, expand their knowledge on research, and, consequently, improve their research skills. In the spring semester 2019, she decided to redesign the class environment by infusing hybrid learning model into the research teaching process. Station rotation blended learning (SRLM) was the model adopted since it helps in modernizing the learning experience through its innovative planning, kinesthetic implementation, and multifaceted assessment (Staker & Horn, 2012). The purpose was to investigate the impact of SRLM on students' attitude towards research as well as on the development of their research writing skills. Conducting such an investigation helps explore whether SRLM at the undergraduate level has the same positive effect as that at the KG-12 level. Equally important, the findings of the research contribute to the literature that has scarce studies on SRLM in higher education, especially in the EFL context.

The study was guided by the following research questions:
1. To what extent does SRLM help students develop a positive attitude towards research writing?
2. To what extent does SRLM help develop students' research writing proficiency?

Literature Review

Undergraduates' Attitude towards Conducting Research

Assessing students' attitude toward research writing is essential for developing instructional techniques that lead to a positive motivating learning experience for both instructors and learners. According to literature, conducting a research and writing a report on is not a pleasant experience for many undergraduates, especially those in their early major stage. Students tend to have a negative attitude despite their knowledge of the importance of research and its positive impact on their major senior projects and, consequently, their future career skills (Alsied & Ibrahim, 2017; Belgrave & Jules, 2015; Oguan Jr. et al., 2014; Papanastasiou , 2005).

Papanastasiou (2005) created The Attitudes Toward Research (ART) scale that verifies the dimensions of undergraduates' attitudes towards research based on five factors: usefulness of research in career, anxiety of research, positive attitude towards research, relevancy of research to non-academic and daily life, and difficulty of research. She used the instrument to investigate the attitude of education-major students who finished their introductory "Methodology of Educational Research" course at the University of Cyprus. Results of (ART) scale showed that anxiety of research (tension, stress, fear, and difficulty in understanding research) was the second highest ranked factor after the usefulness of research.

Papanastasiou's (ART) scale was adopted in many other research investigations on undergraduates' attitudes towards research. The longitudinal study of Belgrave and Jules (2015) on level two and three linguistic students at the University of West Indies Cave Hill Campus revealed that students found it challenging to understand the concept of research and to link the research process to their major; hence, they reached their final year unable to write their senior research project paper. (ART) scale results showed that despite acknowledging the value of

research, the majority of participants did not enjoy the research process and were not interested in research. Similar results were also found among undergraduates from Colleges of Arts and Sciences at Rizal Technological University (Oguan Jr. et al. , 2014)

Also studies on social work undergraduates revealed undergraduates' reluctance towards research courses and the learning process. This was noticed among students in different years of their major. Findings showed considerable negative attitude, high level of fear and anxiety, and lack of enthusiasm (Belgrave & Jules, 2015; Einbinder, 2014; Gredig & Bartelsen-Raemy, 2018; Morgenshtern, Freymond, Agyapong, & Greeson, 2011).

Other than understanding the systematic nature of research, writing the research report is not less difficult. Students' lack of experience in research and the absence of workshop or related activities on research writing result in different difficulties that range from choosing and narrowing down a researchable problem, formulating a research question, evaluating the resources, analyzing the collected data, deducing a conceptual framework, synthesizing and paraphrasing evidence, and citing references properly (Alshehry, 2014; Alsied & Ibrahim, 2017; Dwihandini, 2013; Mahammoda, 2016; Mapolisa & Mafa, 2012; Nor, 2017). Furthermore, students find difficulty in abiding to a pre-set time table schedule and identifying a scope for their investigation.

Based on the findings, almost all of the studies conducted on students' attitude towards the research process suggest similar recommendations. First, there is a need to start introducing the research systematic-inquiry process in the early stage of students' major. They should be continuously involved in research activities and report writing in their early academic semesters. This helps them get acquainted with different methodologies and investigation tools, which can be utilized in different academic and non-academic disciplines. Hence, they develop the necessary research skills for completing their major research projects and, consequently, for developing themselves into active members in their communities and countries (Belgrave & Jules, 2015; Gredig & Bartelsen-Raemy, 2018).

Another important recommendation is that teachers should support their students in managing their anxiety so that their fear of research does not hinder the development of their research skills and affect their academic performance at a later stage. This takes place by creating a motivating learning environment that promotes positive attitude towards the research process (Belgrave & Jules, 2015 ; Papanastasiou, 2002). The aim is to apply "best practices" through which students enjoy research process experience and at the same time develop their cognitive and problem-solving skills to be able to think like experts and apply the acquired research process independently in any subject area (Nichols 2002 as cited in Belgrave & Jules, 2015). Hence, the emphasis is not on delivering lectures and power-point presentations on the research process. In contrast, teaching the research process should be transmitted to students through active learning in which learners interact, discuss and collaborate, critically analyze and share their evaluation and thoughts, while the teacher takes the role of the facilitator.

Collaborative Learning for Promoting a Positive Research Experience

Research skills have been identified as one of the essential 21st century skills which undergraduates should acquire and develop due to their direct relation to economic prosperity of an individual and of the nation as a whole. The 21st century envisioned competencies have to be cognitive (e.g. critical thinking, problem solving, metacognitive) and non-cognitive (eg. tolerance, teamwork, conflict-resolution). Thus, there is a need for students to apply their cognitive and metacognitive skills in a social collaborative setting. This need entails a redesign for the learning environment as well as for the assessment of competence (Child & Shaw, 2016).

Collaborative learning environment is part of active-learning that requires high-order thinking and emphasizes the exploration of one's attitudes and values. According to constructivist learning theory, active learning approaches help students construct their knowledge by making connections between their current knowledge and the new information given to them. In fact, such type of learning has proved its effectiveness in different discipline and at different levels, especially in terms of promoting a positive learning environment and in developing students' performance. In relation to developing undergraduates' research skills, many studies reached the findings that collaborative work shapes a positive attitude and helps students overcome a lot of challenges in the research process. Learners "enter into a social contract with the aim of achieving a desirable outcome" (Child & Shaw, 2016, p. 18). Members of the group project share their understanding and analysis of a problem and pool their knowledge, effort, and skills to reach a solution. Kirton, Campbeil, and Hardwick's report on developing their participants' research skills through collaborative work not only encouraged students to get enthusiastic about the research process but

also developed their research competences (2013). Activity-based learning also proved its effective impact on students' research knowledge and confident performance (Allen & Baughman, 2016).

In addition, active learning model helps develop students' critical thinking and problem solving skills, which are fundamental for analyzing research findings and coming up with conclusions and recommendations. Hence, it brings a sense of enjoyment and appreciation for the value of research (Hurlbut & Elkins, 2018). According to Ito and Kawazoe (2015), active learning nurtures learners' discovery skill, which is a desirable employability skill based on critical thinking, creativity, communication, problem-solving, leadership and team-based work. Nurturing such research skills in a group work leads to innovation in which students conduct research in a socially interactive environment and try to discover from previous research a new truth (Gokhan, 2013). "Therefore, employing active learning approaches such as cooperative learning is reasonable to help develop students' research skills, especially in the employability context, as students work on real world issues" (Ito & Kawazoe, 2015, p.84).

In conclusion, collaborative-research project develops undergraduates' approach of learning research into becoming qualitatively deeper by moving from content-oriented approach to applying a process-oriented one. Learners end up developing an inquiry mind, relating evidence, and synthesizing knowledge, participating actively and collaboratively, and reflecting maturely on their work, all of which are transferrable skills necessary for their future professional practice (Imafuku, Saiki, Kawakami, & Suzuki, 2015; Pantoya, Hughes & Hughes, 2015).

Station Rotation Learning Model for a Successful Collaborative Experience

Constructivist learning theory emphasizes active learning approaches through which learners are the center of the learning process. They connect between new information and current schemata knowledge, extend their understanding and experience, and develop higher-order thinking. Active learning approaches also emphasizes students' exploration of their own identities, values, and attitudes through "Think-Pair-Share" and reciprocal teaching-learning strategies.

In the last decades, higher institutions have been invaded by the rise of the internet and online learning applications, which shaped a new delivery approach known as blended learning. Universities have recognized the opportunity blended learning offers to our non-traditional digital learners who are part of the constantly changing world. In fact, the hybrid model of blended learning (online instruction mixed with class instruction) has paved more space for differentiated and personalized learning that meets with the teaching revolution of constructivist theory and with students' 21st century educational needs. In alignment with active learning approach, education through blended learning is acquired in a student-centered environment where learners take ownership of their learning, create their own goals, decide on their strategies, and make decisions to reach their objectives. Constructively, learners connect between new information and current schemata knowledge, extend their understanding and experience, and develop higher-order thinking. Students also explore their own identities, values, and attitudes through "Think-Pair-Share" and reciprocal teaching-learning strategies. In addition to that, technology is an integral part of the blended learning environment that helps increase the motivation and engagement of the new digital generation, hence adding modernization to the learning process.

The new flexibility of learning takes place through different blended learning models: Rotation, Flex, A La Carte, and Enriched Virtual Models. The following research study adopts the station rotation learning model (SRLM) in an attempt to investigate its impact on students' attitude towards and performance in research writing. SRLM helps instructors shift from the traditional teaching approaches in a sense that students rotate through different online and offline strategies. The class is divided into small learning communities/stations; each station is designed for a different task with at least one of the stations requiring an educational technology tool (see Figure 1).

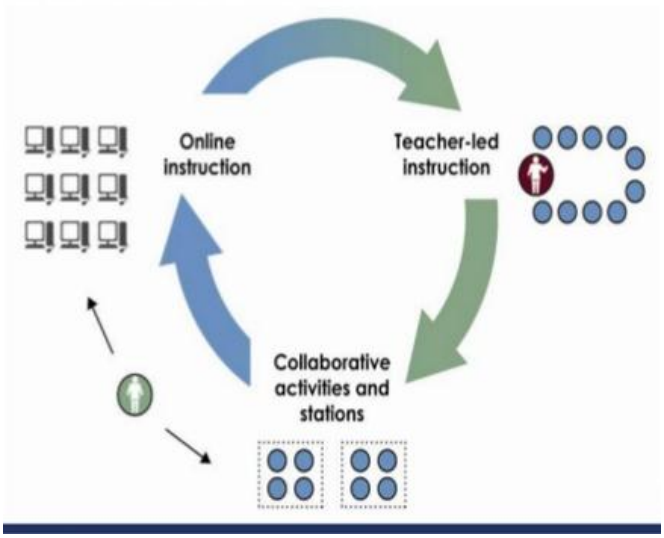

Figure 1:-Station Rotation Blended Learning Model (as cited in Staker & Horn, 2012)

Figure 1 shows that learners rotate from one station to another based on the teacher's discretion. A common setting adopted is that of the three different types of stations: teacher-led instruction, collaborative learning stations, and self-directed online learning station. The importance of this setting is in the flexibility it provides for differentiated learning as students learn at their own pace and time while receiving constant feedback and support (Govindaraj & Silverajah, 2017; Staker & Horn, 2012).

The potential of SRLM is in helping teachers embrace a student-center approach with a flexible variety of customization, supervision, and multiple peer collaboration even with large class sizes. With SRLM, teachers create an atmosphere of increased learning interaction, utilize different potential learning resources, reduce learners' feeling of isolation, and promote their learners' critical thinking as students consult and collaborate at different learning levels (Gecer, 2013; Govindaraj & Silverajah, 2017). However, despite the number of research on the positive effects of SRLM on learners' attitude and performance on the KG-12 level, few studies have been conducted on the undergraduate level and specifically on research writing in EFL classes. Hence, the findings of the following study offer new contribution to the literature in this regard.

Methodology:-

Design

The action research study is based on quantitative data collected from an attitude survey and from participants' writing corpus.

Context and Participants

The study was conducted at an English medium Lebanese private university in the Spring Semester 2019. A purposive sample of 55 participants in the English Communication Course participated in the study.

Data Collection and Tools

Data on students' perception was measured through a five-scale Likert questionnaire with 19 items that reflect participants' experience with SRLM. More specifically, the attitude questionnaire measures the impact of SRLM in creating a motivating and an engaging learning environment that helps learners develop a positive attitude towards the research writing process. The reliability of the scale was 0.83 (Cronbach's alpha).

Quantitative data was also deduced from participants' argumentative research papers produced after the completion of all stations. Correction was based on an analytic rubric that measured learners' performance on content, language, coherence, argumentative elements, and appropriate documentation.

Procedure

Learners worked on the following learning objectives:

1. develop basic knowledge of the research process (chose a specific debatable research topic, formulate a research hypothesis, find relevant secondary resources and evaluate them for credibility, find relation between evidence and initial research hypothesis, annotate, summarize and paraphrase relevant evidence, document evidence, and draw conclusions and recommendations)
2. write an argumentative research-based paper following the APA style based on a research hypothesis

The English communication courses offered at the targeted university are usually designed based on blended learning and more specifically the flipped learning model. However, in the spring semester of 2019, the researcher wanted to modernize the undergraduate learning experience through redesigning the brick-mortar environment and changing the class to a station rotation learning environment. The purpose behind these stations was to enhance students' cognitive and non-cognitive skills as recommended by the theories on 21st century lifelong and employability skills. As a first step, the teacher conducted a whole-class discussion in which the theme of the semester was introduced, "Syrian Refugees and the Need of Quality Education". Students discussed the importance of tackling such a theme and then came up with a common research hypothesis. Later, they were divided into stations of five members of different learning mastery level.

In every collaborative station, participants analyzed one type of resource (peer-reviewed article, governmental report and organization report, magazine, journal, or a documentary video) relevant to the research hypothesis. The task was to evaluate the credibility of the resource, analyze the problems tackled in the documents and come up with suitable solutions, take-notes on relevant and different types of evidence (e.g. statistics, expert's opinion, personal experience, facts), paraphrase and synthesize evidence, do in-text citation and referencing list based on APA style, draw conclusion(s) about the research question and suggest recommendations. In addition, students' artistic sense was utilized. They had to create crafts such as a pie chart for writing their paraphrased evidence on statistics, draw and cut faces that uttered their evidence on opinions, and create a three-page newspaper on which they pasted their paraphrased evidence on facts along with a reflective picture. Students' crafts were posted all around the classroom to be referred to later on in the brainstorming and drafting stage.

Students rotated around five sessions, one station per session for 75 minutes. The teacher played the role of the moderator and facilitator in addition to giving teacher-led instructions in her teacher-based station. Throughout the activities, students divided the tasks among themselves, set time for every task, helped and consulted each other, negotiated and shared ideas, and experienced conflict-resolution moments. Upon finishing the five stations, participants wrote an argumentative research paper based on the same theme tackled throughout the stations.

Results and Discussion:-

In this study, one sample t-test was used to investigate the impact of SRLM on participants' attitude towards research writing as well as on their research writing proficiency. Results are displayed in Table 1 and 2.

Table 1:-The t-test results of students' attitude towards research writing through SRLM

Factors about SRLM	Mean	SD	T	Level of significance
Created an enjoyable learning experience	4.56	0.81	41.269	0.000
Improved my understanding of the theme	4.47	0.79	41.514	0.000
Enhanced my note-taking skills	4.56	0.68	48.686	0.000
Enhanced my ability of evaluating resources	4.41	0.73	43.918	0.000
Enhanced my ability of distinguishing between different types of evidence	4.58	0.59	56.099	0.000
Enhanced my APA citation skills	4.21	1.01	30.524	0.000
Increased my confidence in writing	4.29	0.95	32.901	0.000
Made the brainstorming process easier	4.40	0.85	37.864	0.000
Enhanced my critical analysis (analyzing problem and suggesting solution)	4.30	0.74	42.558	0.000
Helped enrich my writing with mature ideas	4.18	0.84	36.441	0.000

Gave me the opportunity to learn from my friends and bridge some knowledge gaps	4.30	0.766	41.196	0.000
Included enjoyable craft activities	4.47	0.76	42.803	0.000
Included helpful teacher's guidance	4.65	0.61	55.509	0.000
Helped me play an effective role in stations	4.32	0.81	38.792	0.000
Helped me become more independent in the research process	3.98	0.99	29.438	0.000
Helped me improve my performance from one station to another	4.40	0.73	43.871	0.000
Encouraged me to collaborate with my friends	4.21	0.93	33.000	0.000
Encouraged me to prepare my assignments before every station	4.01	0.95	30.900	0.000
Recommended in other courses	4.49	0.94	35.025	0.000

Significant difference identified by $p<.05$, df=54

The results displayed in Table 1 show a significant value of (.000) on all survey items, indicating no significant difference between any of the factors measuring students' motivation and engagement in the research process. The p-value also reveals that participants confirmed all factors, validating by this the impact of SRLM in helping learners develop a positive learning experience towards research writing.

Table 2:-The t-test result of students' research writing proficiency

Argumentative Research Paper	Mean	SD	T	P
	72.96	8.04	11.945	0.000

Significant difference identified by $p<.05$, df=54

Table 2 displays the result of participants' argumentative research paper produced after the completion of all stations. The mean score (72.96) indicates a satisfactory average of students' writing performance (passing grade is 60/100). Moreover, the p-value (.000) indicates a significant difference and, thus, validates the hypothesis that SRLM helps in developing students' research writing proficiency.

Hence, results of the following research studies reveal that Station Rotation Learning Model (SRLM) not only created a motivating learning environment for learners but also had a positive effect on developing their research writing proficiency. This finding is similar to what Allen and Baughman (2016), Hurlbut and Elkins (2018), and Kirton et. al (2013) reported on the effect of active learning in raising students' enthusiasm about learning, increasing their confidence, and at the same time developing their research competence.

Moreover, the participants' team spirit and successful collaboration is reflected in the mean score (72.96) and p-value (0.000) of their writing proficiency results. These numerical results imply what Imafuko et al. (2015) described as deep qualitative approach to research. In other words, participants' final writing product reflect developed inquiry and cognitive skills and a mature reflection of evaluation and synthesis of evidence. Hence, they were able to move from the content-oriented approach to the process-oriented approach (Pantoya et al., 2015) and produce a satisfactory research-based papers that reflect their research competence at this communication course level.

Conclusion and Recommendation:-

As a conclusion, the following research study responds to the recommendations raised on the need of changing undergraduates' negative attitude towards research by developing learners' research skills at an early stage and in an active learning environment. The study also proposes for scholars of different disciplines a descriptive procedure of one modern way of redesigning their research teaching approach in a positive, active, social, and efficient learning environment. This approach helps them in turning their learners' research skills into transferable skills necessary for their future careers. However, further research studies on a wider scope are recommended to investigative the impact

of station rotation learning model on students' research competence and skills for the purpose of having more valid results.

Finally, it is worth mentioning that many faculty members overlook the undergraduates' unawareness of research, deforming by that the future of their students. One recommendation to curb this phenomenon is to integrate primary research in the early major stage through a combination of lectures, collaborative projects with peers and/or faculty members. Senior students could also be referred to for monitoring the juniors' research experience.
Another factor that helps solidify undergraduates' research experience is to help learners move from theory to practice and develop their statistical literacy and conceptual understanding. One way is to involve them with collecting real primary data that helps in solving local issues. Another way is to build cooperative bridges with national agencies, research organizations, or international NGOs and work on local and international issues in which conducting research on would be of tangible value.

References:-

1. Allen, P.J., & Baughman, F.D. (2016): Active learning in research methods classes is associated with higher knowledge and confidence, though not evaluations or satisfaction. Frontiers in Psychology, 7(279): 1-7. DOI: 10.3389/fpsyg.2016.00279
2. Alshehry, A.T. (2014): Teaching research writing to female undergraduates in Saudi Arabia. International Journal of Education Learning and Development, 2(4): 15-25.
3. Alsied, S. M., & Ibrahim, N.W. (2017): Exploring challenges encountered by EFL Libyan learners in research teaching and writing. IAFOR Journal of Language Learning, 3(2): 143-158.
4. Aschbacher, P. R., Li, E., & Roth, E. J. (2010): Is science me? High school students' identities, participation and aspiration in science, engineering and medicine. Journal of Research in Science Teaching, 47(5): 564-582.
5. Badke, W. (2019): Reading to write: Using disciplinary expertise and source reading with the ACRL framework to enhance the conceptual depth of writing students. In G. Veach (Ed.), Information literacy and writing studies, vol.2, upper-level and graduate courses, pp.135-146. West Lafayette, IN: Purdue University Press.
6. Belgrave, K.L., & Jules, J.E. (2015, June): Students' attitudes towards research applying best practice principles through a student-centered approach. Paper presented at the Regional Conference on Institutionalizing Best Practice in Higher Education, UWI, St. Augustine, Trinidad and Tobago.
7. Child, S. F. J., & Shaw, S.D. (2016): Collaboration in the 21st century: Implications for assessment. Research Matters: A Cambridge Assessment publication, 22: 17–22. Retrieved from http://www.cambridgeassessment.org.uk/ Images/374626-collaboration-in-the-20th-century-implications-forassessment.pdf
8. Dwihandini, L.A., Marhaeni, A.A.I.N., & Suarnajaya, I.W. (2013): The analysis of the factors affecting undergraduate students' difficulties in writing thesis in the English department of Mahasaraswati University. E-Journal Program Pascasarjana Universitas Pendidikan Ganesha Program Studi Pendidikan Bahasa, 2: 1-12.
9. Einbinder, S.D. (2014): Reducing research anxiety among MSW students. Journal of Teaching in Social Work, 34(1): 2-16. DOI:10.1080/08841233.2013.863263
10. Gecer, A. (2013): Lecturer-student communication in blended learning environments. Educational Sciences: Theory and Practice, 13 (1): 362-367.
11. Gokhan, A. (2013): The effect of project-based learning on students' motivation. International Journal of Academic Research 5(2): 82-86. http://dx.doi.org/10.7813/2075-4124.2013/5-2/B.11
12. Govindaraj, A., & Silverajah, V.S.G. (2017, December): Blending flipped classroom and station rotation models in enhancing students' learning of physics. Paper presented at the ICETC 2017, Barcelona, Spain. Retrieved from https://doi.org/10.1145/3175536.3175543.
13. Gredig, D., & Bartelsen-Raemy, A. (2017): Exploring social work students' attitudes toward research courses: Predictors of interest in research-related courses among first year students enrolled in a bachelor's programme in Switzerland. Social Work Education, 37(2): 190-208. DOI: 10.1080/02615479.2017.1389880.
14. Hurlbut, J., & Elkins, M. (2018): Redesigning an undergraduate nursing research course using innovative teaching strategies. SM Journal of Nursing, 4(1): 1-3. Retrieved from https://smjournals.com/nursing/download.php?file=fulltext/smjn-v4-1017.pdf
15. Imafuku, R., Saiki, T., Kawakami, C., & Suzuki, Y. (2015): How do students' perceptions of research and approaches to learning change in undergraduate research? International Journal of Medical Education, 6: 47-55. DOI: 10.5116/ijme.5523.2b9e.
16. Ito, H., & Kawazoe, N. (2015): Active learning for creating innovators: Employability skills beyond industrial needs. International Journal of Higher Education, 4(2): 81-91. DOI:10.5430/ijhe.v4n2p81

17. Kirton, A., Campbell, P., & Hardwick, L. (2013): Developing applied research skills through collaboration in extra-academic contexts. The Higher Education Authority [Website]. Retrieved fromhttps://www.heacademy.ac.uk/sites/default/files/resources/Liverpool.pdf
18. Mahammoda, S.A. (2016): Factors affecting the quality of undergraduate research work in Bahir Dar University, Ethiopia. International Journal of Innovative Research & Development, 5 (12): 23-27. Retrieved from (copy/paste Libyan journal).
19. Mapolisa, T., & Mafa, O. (2012): Challenges being experienced by undergraduate students in conducting research in open and distance learning. International Journal of Asian Social Science, 2(10): 1672-1684.
20. Morgenshtern, M., Freymond, N., Agyapong, S., & Greeson, C. (2011): Graduate social work students' attitudes toward research: Problems and prospects. Journal of Teaching in Social Work, 31(5): 552-568. Doi:10.1080/08841233.2011.615287
21. Nor, A. I. (2017): Somali undergraduate students' attitude towards research at University of Somali in Mogadishu-Somalia faculty of business administration. International Journal of Sciences: Basic and Applied Research, 31 (3): 27-43.
22. Oguan Jr. F.E., Bernal, M.M., & Pinca, M. C.D. (2014): Attitude and anxiety towards research, its influence on the students' achievement in the course. Asian Journal of Management Sciences & Education, 3(4): 165-172.
23. Papanastasiou, E.C. (2005): Factor structure of the "Attitudes Toward Research" scale. Statistics Education Research Journal, 4(1): 16-26.
24. Pantoya, M., Hughes, P.C., & Hughes, J.S. (2015): A case study in active learning: Teaching undergraduate research in an engineering classroom setting. Engineering Education, 8 (2): 54-64. DOI: 10.11120/ened.2013.00014
25. Patak, A. A., & Naim, H.A. (2012): ESL/EFL students attitude toward research report writing in higher education: A literature review. Management Educator: Courses, Cases, & Teaching eJournal, 5(65):1-5. DOI: 10.2139/ssrn.2119602.
26. Petrella, J.K., & Jung, A.P. (2008): Undergraduate research: Importance, benefits, and challenges. International Journal of Exercise Science, 1(3): 91-95.
27. Science Education Research Center. (2018, May): How to Engage Undergraduates in Research. Retrieved from https://serc.carleton.edu/introgeo/studentresearch/How.html.
28. Shaukat, S., Siddiquah, A., Abiodullah, M. & Ali Akbar, R. (2014): Postgraduate students' attitudes towards research. Bulletin of Education and Research, 36(1): 111-122.
29. Siamian, H., Mahmoudi, R., Habibi, F., Latifi, M., & Zare-Gavgani, V. (2016): Students' attitudes towards research at Mazandaran University of Medical Sciences in 2015. Mater Sociomed, 28(6): 468-472. DOI: 10.5455/msm.2016.28.468-472
30. Staker, H.C., & Horn, M.B. (2012): Classifying K-12 blended learning. Retrieved from Innosight Institute website www.innosightinstitute.org.