Learning readiness when sharing knowledge while e-learning

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Abstract

Past research indicates the importance of assessing the role of higher education (HE) students' Learning Readiness's (LR's) two-dimensions (Self-Directed Learning - SDR and Motivation for Learning - MFL) on learning behaviors (Knowledge Sharing Quality -KSQ) during e-learning in developing countries. This article is a critique of a literature review led to a conceptual framework which in turn was empirically investigated (correlation analysis, using Pearson and Spearman correlation), with findings shedding new contributions to knowledge, and opening new avenues for the research in progress. This deductive cross-sectional research confirms this role via an adopted survey, data-collection from 253 Ahlia University undergraduate students who constantly participate in e-learning practices on Moodle. Empirical analysis of this study confirmed a positively significant relation between SDL → KSQ and, MFL → KSQ. Limitations and implications are discussed in this article. The empirical findings of this article are new contributions to knowledge, which are particularly generalizable to Ahlia University's undergraduate business students; thus a knowledge contribution with higher education private institutions in Middle Eastern developing countries, as this study occurred in the Kingdom of Bahrain (a literate driven need for such research).

Preparación para el aprendizaje cuando se comparte el conocimiento mientras se aprende a distancia.

Resumen

Las investigaciones anteriores indican la importancia de evaluar el papel de las dos dimensiones de Liderazgo (Learning Readiness, LR) de Aprendizaje de los estudiantes de educación superior (HE) (Aprendizaje autodirigido - SDR y Motivación para el aprendizaje - MFL) sobre conductas de aprendizaje (Calidad de intercambio de conocimientos -KK) durante El e-learning en los países en desarrollo. Este artículo es una crítica de una revisión de la literatura conducida a un marco conceptual que a su vez se investigó empíricamente (análisis de correlación, utilizando la correlación de Pearson y Spearman), con hallazgos que arrojan nuevas contribuciones al conocimiento y que abren nuevas vías para la investigación en progreso. Esta investigación transversal deductiva confirma este rol a través de una encuesta adoptada, recopilación de datos de 253 estudiantes universitarios de la Universidad de Ahlia que participan constantemente en las prácticas de aprendizaje electrónico en Moodle. El análisis empírico de este estudio confirmó una relación positivamente significativa entre SDL → KSQ y, MFL → KSQ. Las limitaciones y las implicaciones se discuten en este artículo. Los hallazgos empíricos de este artículo son nuevas contribuciones al conocimiento, que son particularmente generalizables para los estudiantes de negocios de pregrado de la Universidad de Ahlia; por lo tanto, una contribución de conocimiento con las instituciones privadas de educación superior en los países en desarrollo del Medio Oriente, como este estudio ocurrió en el Reino de Bahrein (una necesidad alfabetizada de tal investigación).

Palabras Clave: El intercambio de conocimientos; Preparación para el alumno; e-learning; Moodle; Educación más alta.

1. INTRODUCTION

The teaching and learning domain incorporates e-learning with regular face-to-face teaching to harness online work collaboration. The question is

whether students are ready for this. Therefore, assessing learner readiness using a survey instrument, for e-learning, is essential. Such a quantitative instrument has been used, been improved and re-used again by scholars, particularly in the educational sector. Initially learning readiness was based on learning self-management of e-learning. (Hung, et al., 2010). Learning readiness is actually an interest that thrives on acquiring of knowledge. It is, therefore, a driving force behind the behavior of sharing quality knowledge (Rotgans and Schmidt, 2017). Rotgans and Schmidt assessed such a statement as a hypothesis, and reported two types of interests, individual and situational, where individual interest is personal interest and situational interest is a temporary event encountered by a learner. Individual interest encounters ample engagement and as a result experiences an inspiration for deeper learning through deeper processing of reading materials encountered through personal interest upon a topic of research. Therefore being interested determines how much can be achieved from a learning outcome (LO) (Rotgans and Schmidt, 2017).

In education research scholars have contributed instruments pertaining to e-learning readiness and mobile- learning readiness. They made empirical evidenced conclusions based on investigations done at regional and country-level. Scholars performed micro-level investigations, in which learners and instructors were the target populations. At the micro-level, individual attitudes, skills and knowledge become the key aspects of the investigation. Unfortunately such conceptual frameworks fall short since they tend to adapt inconsistent unidimensional understandings of learning readiness (Blayone, et al., 2018).

Hao (2016) targeted undergrad Education majors and attained 84 responses when they wanted to assess the role of learning readiness on flipped learning (FL). FL is highly important in higher education learning environments. This student centered form of learning evidences successful during its LO achievements in the higher education environments and in a FL approach students are required to learn facets of knowledge before arriving to their class. This way during class sessions, an instructor can direct learners through personalized and individually oriented instructions, i.e. through assignments, problem-solving session for personalized in-class learning. Unfortunately, on the one hand some scholars report students outperform in FL vs. traditional classroom while some other scholars express lack of learning readiness towards FL. This is due to limited empirical evidence. Additional research is necessary to furnish more empirical confirmation for FL learning readiness to appreciate what learners truly want from FL;

considering that FL cannot satisfy needs of all students (Hao, 2016).

In accordance with this gap and to the notion that learning readiness drives acquisition of knowledge, hence a driver for knowledge sharing (KS) (Rotgans and Schmidt, 2017), it would be interesting to investigate what role learning readiness plays on knowledge sharing quality. This is un-chartered territory. i.e. the need to assess the role of e-learning readiness in order to effectively utilizes KS and knowledge transfer; to better support learning the 21st century HE sector. In such e-learning networked systems the quality of teaching and learning is enhanced, yet research is needed on the role of learning readiness on knowledge sharing quality in an e-learning environment. There still a need for such future research in developing countries. Furthermore, past scholars assessed learning readiness scales, to assess the knowledge and skills required for e-learning. Such scales tested technical skills and teacher/ learner achieved behaviors when preparing for learner readiness. However past scales or frameworks identified problem areas without providing a solution to correcting any short-coming (Gay, 2016).

The role of learning readiness for KS behavior in virtual environments like Moodle, a platform used at Ahlia University (i.e. Case University for this research context in the Kingdom of Bahrain - a Middle Eastern developing country) is an important area of research. Furthermore, learners' KS behavior is important in the e-learning context when learners share knowledge to learning experiences on platforms like Facebook. Knowledge sharing quality becomes an effective measure of perceived learning effectiveness because self-directed learning occurs virtually during KS, which further strengthens their knowledge (Li, et al., 2016). When KS occurs within virtual environments, such a behavior transforms traditional learning environments to an e-learning environment where participation within virtual contexts and KS can be between learners and their instructors. E.g. KS can be learners attaining feedback from their instructors in virtual e-learning environments (Li, et al., 2016). Last but not least, the KS behavior gained little focus from scholars when it comes to investigating the unclear episodic nature of KS: particularly when it comes to KS being a citizen behavior; as this is one of the two types of KS behaviors with the other being the rewarded behavior. The citizen behavior implies that supervisor (i.e. instructor in the case of the HE) and coworkers (i.e. learners as the case of higher education) perceive usefulness of KS, thus indulge in this behavior. However, it is unclear if such KS is a reward behavior and if so then it is due to indulging in such a behavior (Zhang and Jiang, 2015).

Similar is the dilemma within the education sector and this is the reason for the following conceptual framework of this study.

2.   CONCEPTUAL FRAMEWORK

Based on the above argument, the aim of this study is to assess the role of students' learning readiness (independent variable) on their knowledge sharing quality (dependent variable). Learning readiness is based on two dimensions: self-directed learning and motivation for learning (therefore: two independent variables of learner readiness). Henceforth, as depicted in Figure 1; two hypotheses are proposed: (1) learners' SLD has a positive and a significant effect on their knowledge sharing quality and learners' motivation for learning has a positive and a significant effect on their knowledge sharing quality.
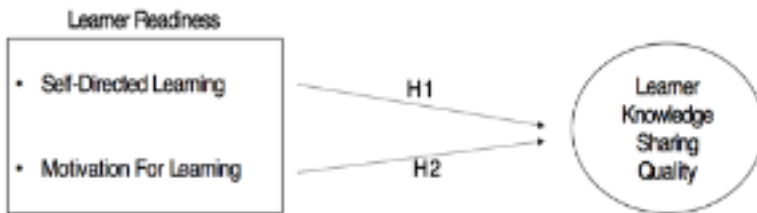

Figure 1. Conceptual Framework

3.   LITERATURE REVIEW

Technical skills and learner control significantly define learning readiness: a concept that originated from Australia since 1998. The first learning readiness instrument was developed and tested in 2000. Learning readiness shapes online attitudes and behaviors making students more active learners and instructors no longer central in virtual environments. Learner control makes learner responsible of self-learning. The two dimensions of learning readiness are self-directed learning, which inspires learners for self-learning and motivation for learning, which sets the learner's attitude and behavior such that motivation for learning affects learning performance (Hung, et al., 2010). Hung, et al. empirically assessed learning readiness instrument on a five-point-Likert-Scale on 1,051 students from 3 Taiwan universities. A model was confirmed valid and reliable. With reference to learner readiness, 121 studies, from 1965 to 1992, empirically confirmed a correlation between interest and academic achievement; making future scholars gain interest on learning readiness as the independent and knowledge outcomes as the dependent variable in empirical assessments. Still, the confusion is whether it is learning readiness that causes learners

to gain knowledge since it is possible that increase of knowledge of a topic inspires interest in that topic (Rotgans and Schmidt, 2017). Rotgans and Schmidt ventures forth to establish the right empirically evidenced direction between interest and knowledge. The confusion is that while some scholars support the notion that knowledge inspires interest, other scholars assessing the role of attitudes on learning, state that not knowledge alone, but achievement, predict an attitude to inspire an interest for learning especially in female learners. Two studies tested these three hypotheses; i.e. (1) cross-lagging of panel analysis on 186 primary science students to a problem oriented learning activity where interest and knowledge were separately studies at two different times. To further validate the empirical findings (2) two quasi-experiments were carried out via 68 secondary 14 year old students to assess the nature of the relation between interest and knowledge. In another study, 84 undergraduate students, from two courses, participated by first watching YouTube videos, Audios via Moodle, textbook readings and other information-lookups on the Internet before class: as per norms of FL strategy. Students were given an e-quiz assessing their academic performance via their own devices, like smart phones, tablets, etc. Group discussion were instructor-led and tasks involved website-evaluations and end-of-class discussions. Students participated in a survey providing feedback on FL strategy. Empirical findings indicate 60% respondents recognized merits of FL. Those learners who did not prepare before classes still appreciate FL. While students appreciated FL they were not responsible due to low motivation for learning (Hao, 2016). Self-directed learning has existed for forty years in tertiary education and has inspired student in self-learning. It requires self-determination: dependable on aptitude and self-assertiveness. Such characteristics are investigated and empirically indicate that instructor can inspire self-directed learning in learners and prove that self-directed learning influences KS (Alshaikh, et.al, 2017). So, an instructor's positive behavior inspires learners to gain knowledge. Self-directed learning is an objective of higher education institutions with growing acknowledgement for implementation, especially with rising challenges in GCC higher education institutions for quality assurance requirements (Costandi, et.al, 2018). Self-directed learning proves vital since such is a human powering learner characteristic for sustaining knowledge society via metacognition, thinking and self-recognition (Toit-Brits and Zyl, 2017). Research is lacking on students with disabilities due to limited higher education resources. In this scenario self-directed learning proves most effective since it is a cost ef-

fect means of learning, especially for students with disabilities (Garderen, et al., 2017). Such a learning technique is encouraged in graduate medical schools. To assess self-directed learning, medical and post-grad students were exposed to simulation based in-lab training sessions and requested to practice laparoscopic skills. Subsequently a survey was conducted addressed learners habits and obtain learners feedback for curriculum improvements. Empirical evidence suggested that participants improved in their practical skills and reported self-directed learning during their individual endeavors to improve practical skills (Aho, et al., 2015). Since technology is widely used in education it should be integrated with teaching and learning (TaL). Impact of technological on TaL is still unclear in research, i.e., to what extent technology enhances academic performance via e-learning. Research in the past two-decades evidenced positives and negatives of integrating technology in e-learning. While research probed technology's role on e-learning other studies examined self-directed learning's role in education. Current literature suggests integrating these two research themes. Even though scholars explore these themes, there is still lacking empirical evidence to holistically assess technology's role, student engagement, self-directed learning and academic performance (Rashid and Asghar, 2016). It is evident how positively self-directed learning affects academic performance. Also, accumulative assessment encourages learners to work harder: the issue being that not all students are responsive towards self-directed learning. Current research expresses the importance of assessing learner behavior to improve their responsiveness (Tio, et al., 2016).

The motivation of informal learning is not institutional sponsored but originates with the learner who seeks knowledge and skills by reading or by peer knowledge sharing for feedback. Such motivation for learning aids a learner to stay abreast with the dynamics of updating one's self of new knowledge and such collective knowledge proves sustainable versus the knowledge gained through an instructor. Informal form of learning, i.e. motivation for learning, has gained scholarly interest in recent literature. This is especially considering that past research has been paying a lot of attention on factors like self-efficacy and learning motivation (van Rijn, et al., 2013). The motivation for learning research area is investigated before the e-learning ear in schools but less in the higher education sector: even though such a need exists. E.g. five students were targets of a case study investigating their ability to tackle math problems of a particular discipline. Empirical evidence confirmed that challenging students in problem-solv-

ing improves motivation for learning in math. Since math is hard problem-solving via rigid algorithms. Scarce research assess motivation for learning in mathematics for Arab student with disabilities. Future research could investigate this matter (Bishara, 2016). In another study 7th grade Cyprus students' motivation for learning in Biology was examined when these target students' tests were used as indicators to measure level of understanding of a particular material, following survey distribution to assess motivation for learning in this subject. Findings indicated the contribution of gender, prior knowledge and motivation for learning moderate learning in Biology via inquiry: an important finding since past scholars indicated lack of understanding with regard to gender, knowledge or motivation for learning (Hadjichambis, et al., 2016). Data from European students, for attitudes and motivation for learning, indicated that test results improved reflected motivation for learning driven from this visit (Salmi, et al., 2016). Low motivation for learning is in logical programming (a graduate Computer Science curriculum) learners as this is a hard subject to grasp. When e-learning is accompanied with a collaborative problem-solving, a rise in motivation for learning is observed. This study evaluates virtual tools that can aid in motivation for learning for logical programming (Vosinakis, et al., 2018).

4.   RESEARCH METHODOLOGY

This study initiated with a structured literature review that critiqued precise literature to understand the gap in research pertaining to the e-learning research. The literature review phase led to research questions and research objectives followed by conceptual framework and the relative two hypotheses. To test the hypotheses data was collected with 253 Ahlia University respondents generalizable over College of Business and Finance's 700 students (i.e. close to approximate) population. Collected data was analyzed using descriptive and advanced descriptive analysis followed by correlation analysis and explained in the data analysis section. This is a deductive research approach, which seeks confirmation on two of its models' hypotheses and cross-sectional data collection led to 253 responses with completely filled online survey forms. The survey instrument was adapted from two sources: (1) learning readiness was adapted from (Hung, et al., 2010) and learner knowledge sharing quality was adapted from (Chiu et al., 2006). It is important to note that while this study's instrument is adapted and integrated the needs for assessing this study's two hypotheses is

literature driven; past scholars have not assessed the role of knowledge sharing quality in a higher education sector before. This is the novelty of this study that attempts to this integration.

5.   DATA ANALYSIS

The following section portrays the analyzed data expressed through the six tables depicted below. Table 1 depicts the respondents' profiles as data, using an adapted and integrated survey was used. 253 respondents participated and as per Table 1, gender wise the same has 133 males and 120 females in multicultural classrooms. This evidences that there is a normal distribution in this study's sample. Student level wise the data is normally distributed considering that freshmen, sophomore, junior and seniors were around 25% mark of responding participants. Student status wise; majority of target student population at Ahlia University's College of Business and Finance is Gulf Corporation Council (GCC) students. College of Business and Finance program wise: there seems to be a normal distribution considering the total number of students in their respective programs versus the total number to students in the College of Business and Finance.

Table 1: Profile of respondents

Sample Characteristics		Frequency	Percent
Gender	Male	133	53%
	Female	120	47%
	Total	253	100%
Student Level	Freshman	65	26%
	Sophomore	64	25%
	Junior	64	25%
	Senior	60	24%
	Total	253	100%
Student Status	GCC student	185	73%
	Non-GCC student	68	27%
	Total	253	100%
Program Enrolled in	BSMIS	40	16%
	BSAF	94	37%
	BSMM	53	21%
	BSBF	44	17%
	BSEF	22	9%
	Total	253	100%

As per knowledge sharing quality (Table 2) 64% agree and 31% strongly agree, with mean = 3.8, i.e. > 3 with SD = 1.5. It was noticed that the general percentage = 78%, i.e. 78% of sample agree that e-learning aids knowledge sharing quality. Quite similar were analysis of remaining knowledge sharing quality items; with highest general % for KS1 and lowest for KS6. Similarly, learners' self-directed learning (Table 3), and learners' motivation for learning (Table 4) express all items satisfactory mean (3.54 to 3.78) i.e. > 3 and general % (71% to 77%). Furthermore, Path analysis of three variables, self-directed learning. Motivation for learning and knowledge sharing quality, (Table 5), based on gender, student level and College of Business and Finance program; the authors of this article divided sample in two parts as per sample characteristic. E.g. gender to male and female and compared it with three variables. It was noticed that knowledge sharing quality for males reflected similar with females; i.e. no difference s significance > 5% for t and z-test. Gender difference would be reflected if the significance was < 5. For student level; this study's sample was divided to four levels: freshman, sophomore, junior and senior: to be compared with three variables; thus resulting into three variables similarly distributed amongst four student levels: i.e. there is no empirically difference in the three variables and students' level as significance is > 5% for the t and z-test. The three variables were compared with College of Business and Finance's programs: (1) BSMIS – B.Sc. Management Information Systems, (2) BSAF –Accounting and Finance, (3) BSMM –Management and Marketing

Table 2: Learners' Knowledges sharing quality

Learners' Knowledge sharing quality	The Answers%					Mean	SD	General Percen
	Strongly disagree	Disagree	Neither	Agree	Strongly agree			
KS1: The knowledge shared between instructor and students in Moodle is easy to understand.	6.7	6.7	8.7	46.6	31.2	3.89	1.125	78%
KS2: The knowledge shared between instructor and students in Moodle is relevant	5.5	7.5	10.3	47.4	29.2	3.87	1.087	77%
KS3: The knowledge shared between instructor and students in Moodle is accurate.	5.9	4.3	17	50.2	22.5	3.79	1.031	76%
KS4: The knowledge shared between instructor and students in Moodle is complete.	7.9	6.7	16.2	40.3	28.9	3.75	1.173	75%
KS5: The knowledge shared between instructor and students in Moodle is reliable.	5.1	7.1	13.4	49	25.3	3.82	1.052	76%
KS6: The knowledge shared between instructor and students in Moodle is timely.	6.7	6.3	18.2	47.8	20.9	3.7	1.079	74%

(4) BSBF - Banking and Finance and (5) BSEF – B.Sc. Economic and Finance. There is no difference between programs with reference to three variables: BSMIS was highest (mean = 4.114) following BSEF (4.000), BSMM (3.814), BSAF (3.432) and BSBF (1.023): i.e. sig. < 5%: expressing difference in College of Business and Finance programs. Table 6 describe, Correlation Matrix, and considering that the independent variable in Figure 1 is learner readiness's two dimension, self-directed learning and motivation for learning (independent variables) and learners' knowledge sharing quality (dependent variable); empirical findings are based on the correlations using parametric test, i.e. Pearson correlation and non-parametric test, i.e. spearman test. This is to confirm this study's empirical results, which therefore. Indicate a positively significant correlation (sig < 0.01%) between learner learners' self-directed learning → learners' knowledge sharing quality, i.e. based on 62.5% positive correlation. Furthermore, there is positive correlation between learners' motivation for learning → learners' knowledge sharing quality.

Table 3: Learners' Self-Directed Learning

Self-Directed Learning (SDL)	The Answers%					Mean	SD	General Percent
	Strongly disagree	Disagree	Neither	Agree	Strongly agree			
SDL1: I carry out my own study plan.	8.3	7.5	17.4	34.4	32.4	3.75	1.22	75%
SDL2: I seek assistance when facing learning problems.	7.5	14.2	14.2	40.3	23.7	3.58	1.207	72%
SDL3: I manage time well.	10.7	9.1	20.2	35.6	24.5	3.54	1.252	71%
SDL4: I set up my learning goals	7.9	7.1	17.8	42.3	24.9	3.69	1.155	74%
SDL5: I have higher expectations for my learning performance.	5.5	7.5	15.8	39.1	32	3.85	1.122	77%

Table 4: Learners' Motivation for Learning

Motivation for Learning (MFL)	The Answers%					Mean	SD	General Percent
	Strongly disagree	Disagree	Neither	Agree	Strongly agree			
MFL1: I am open to new ideas.	6.7	8.7	17.8	34.8	32	3.77	1.184	75%
MFL2: I have motivation to learn.	6.3	8.7	15.8	39.1	30	3.78	1.154	76%
MFL3: I improve from my mistakes.	6.3	9.5	11.9	44.7	27.7	3.78	1.14	76%
MFL4: I like to share my ideas with others.	7.1	9.9	16.2	41.1	25.7	3.68	1.166	74%

Table 5: Path analysis for study variables

Characteristics		Number	Learner Knowledge sharing quality	Self-Directed Learning	Motivate Learning
Gender	Male	133	3.800	3.683	3.752
	Female	120	3.800	3.703	3.765
Difference tests	t-test		-0.158	-0.162	-0.100
	Sig.		(0.874)	(0.871)	(0.920)
	z-test		-0.533	-0.011	-0.946
	Sig.		(0.594)	(0.991)	(0.344)
Student Level	Freshman	22	3.932	3.713	3.598
	Sophomore	174	3.826	3.698	3.794
	Junior	51	3.711	3.635	3.667
	Senior	6	3.571	3.450	3.875
Difference tests	F-test		0.450	0.128	0.411
	Sig.		(0.717)	(0.943)	(0.746)
	Chi-square		5.122	1.219	0.717
	Sig.		(0.163)	(0.748)	(0.869)
Program	BSMIS	40	3.864	3.723	4.114
	BSAF	94	3.814	3.632	3.432
	BSMM	53	3.914	3.838	3.814
	BSBF	44	3.584	3.441	1.023
	BSEF	22	3.883	3.945	4.000
Difference tests	F-test		0.933	1.403	2.903
	Sig.		(0.446)	(0.233)	(0.022**)
	Chi-square		2.705	2.577	8.248
	Sig.		(0.608)	(0.631)	(0.083*)

Note: Significance at: *10%; **5% and ***1% levels. Significance value are marked within (brackets),

Table 6: Correlations Matrix

	Learner Knowledge sharing quality	Self-Directed Learning	Motivate Learning
Learner Knowledge sharing quality		0.625***	0.564***
Sig.		0.000	0.000
Self-Directed Learning	0.670***		0.716***
Sig.	0.000		0.000
Motivation for Learning	0.691***	0.796***	
Sig.	0.000	0.000	

Notes: Above Spearman correlation, and below Pearson correlation. Significance at: *10%; **5% and ***1% levels.

6.   Discussion & Conclusion

Gaps were described in this section and can be utilized for future research through this section. Furthermore, a constructive critique of structured literature review led to identify opportunities to narrow the research gap portrayed in these just-mentioned sections. As a result, two hypotheses were empirically testing, as depicted in Figure 1 of this article, using correlation analysis, followed by basic and advance descriptive analysis. Unfortunately, lack of time was encountered due to which the authors express part of this study's continuing study. However, the empirical results bare theoretical and practical implications. Form the theory point of view this study identified the research gap, and therefore its conceptual model and empirical evidenced the need of self-directed learning and motivation for learning for learners to engage in knowledge sharing quality. Future research can assess how this plays a broader significant role of learners' academic performance, in addition to how technology use expresses its importance within the context of Ahlia University's other programs outside College of Business and Finance. Practical implications this model could be adapted by HE for improvement. In addition, expanding this study's model and re-assess it to better understand what new technologies can better facilitate Ahlia University's e-learning agendas.

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