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UNDERGRADUATE STUDENTS' ACADEMIC ACHIEVEMENT AND PERCEPTIONS TOWARDS USING FLIPPED INTERACTIVE LEARNING IN HIGHER EDUCATION

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ABSTRACT: The aim of this research was to develop a new model and reduce the dissimilarities in the literature regarding the use of flipped interactive learning approach on undergraduate students' academic achievement as well as students' perceptions & its effects on their interactive learning. The recent years have seen a raise in the use of flipped interactive learning in higher education contexts as a way of improving the quality of teaching and interactive learning. For this, the empirical study has been done for lessons in a Teaching Strategies course in a pre-service teacher education programme at the University of Alahsa in Saudi Arabia. Lessons were flipped and the impact of such approach was measured using pre-test and post-test results which were compared to those of a control group taught using the standard lecture style adopted at the institution. This research used a mixed-method approach for the data collection e.g. individual semi-structured interviews from 6 students, and 90 undergraduate trainee teachers who were randomly divided into two groups (pre-test and post-test) 30 students are using flipped interactive learning and 60 in the lecture style control group, quantitative structural equation modelling (SEM) was employed to analyse the results. The findings indicate that students in the experimental group achieved higher scores between pre-test and post-test than the control group. In addition, almost all participants in the experimental group expressed positive views towards the flipped interactive learning approach and preferred it to their previous experiences with the lecture style classroom. Most participants indicated that flipped interactive learning brought them academic advantages compared to the lecture style lesson, such as better understanding of the content, improved thinking skills and encouragement to be autonomous learners. Moreover, most students revealed that flipped interactive learning brought them social benefits, such as new interpersonal skills, increasing self-esteem, and increasing enjoyment in interactive learning. Quantitative results, a significant relationship was found between using flipped interactive learning, academic advantages, social advantages, and students' satisfaction. Therefore, the study indicates that using flipped interactive learning increasing achievement of students. We recommend that students using flipped interactive learning in pursuit of their educational goals. Educators should also be persuaded to incorporate using flipped interactive learning into their classes at higher education institutions.

Keywords: Flipped Interactive Learning; Academic Achievement; Students' Perceptions;Higher Education; Teacher Education, structural equation modelling (SEM)

I.   INTRODUCTION

Flipped interactive learning as an approach to teaching has its origins in secondary school education in the United States (Bergmann & Sams, 2012). The objective was largely to motivate students to engage with the content of the lessons by providing recorded input that would then free face to face lesson time for discussion and exploration of the subject studied (Ash, 2012). Recent years have seen a popularization of the flipped lesson approach in Higher Education contexts due to a number of educational and socio-economic issues that

have an impact in the way universities try to accommodate to the growing pressures in the sector (O'Flaherty &Phillips, 2015:86). In the Saudi Arabian context, the traditional method of lecturing students is still the dominant approach to university education. There are cultural and historical reasons for that, but as it happens in other countries, Saudi Arabia also feels compelled to adopt teaching strategies and approaches that would better prepare their students to become active and relevant members of a globalized academic research community (Algarfi, 2010; Alhadi, 2013). As a result,

Saudi educators have been proposing new ideas and approaches in the field of education to facilitate the acquisition of important knowledge and skills (Alsayegh, 2007). However, such transition requires not only the will of governmental authorities and a change in the way universities adapt their educational policies, but also more profound changes in the way lecturers and students perceive their roles in the teaching and interactive learning process. This paper reports on the results of a quasi-experimental study (pre-test and post-test) conducted in Teaching Strategies course in a pre-service teacher education programme at the University of Alahsa in Saudi Arabia. Lessons were flipped and the impact of such approach was measured against a control group which was a taught using the standard lecture style adopted at the institution. This paper starts by considering the concept of flipped interactive learning and examining the interactive learning theories and models that underpin it. The methodology and findings are then presented and discussed, especially considering their implications for the future of adoption of flipped interactive learning in the universities in Saudi Arabia as a whole as well as in other countries with similar educational settings. Learner autonomy has been defined as learners' 'ability to take responsibility for their own interactive learning and to apply active, personally relevant strategies" to it (Littlewood, 1997, p. 81). A flipped lesson approaches has thus the potential not only to promote learner autonomy outside the classroom interactive learning but also collaborative and cooperative interactive learning inside it by encouraging learners to take responsibility for sharing with their peers the knowledge they acquired and positively contributing to the group task performance and discussion (Slavin, 2011). Although definitions of critical thinking can be competing and contested (Ennis, 2016), they tend to share the same common same basic principle of careful thinking directed to a specific goal. Broadly speaking, critical thinking is understood as the ability to analyse and question sources and information while considering different arguments and perspectives when forming one's own opinion and arguments. The development of creative and critical thinking skills is one of the most important goals of academic education (Hooks, 2010).

1.1 Research questions
a. What extent flipped interactive learning has an impact on undergraduate students' academic achievement in comparison with lecture style?

What are undergraduate students' perceptions regarding the flipped interactive learning approach in terms of academic advantages and social advantages?

II. THEORETICAL MODEL AND HYPOTHESES

The theoretical model proposed in the present research is exploring all factors related to the using flipped interactive learning with other factors such as (academic advantages, social advantages, and students' satisfaction). These mentioned factors are found to be consequently increasing achievement of students at institutes of higher education and are being discussed in this section accordingly See Figure.1.
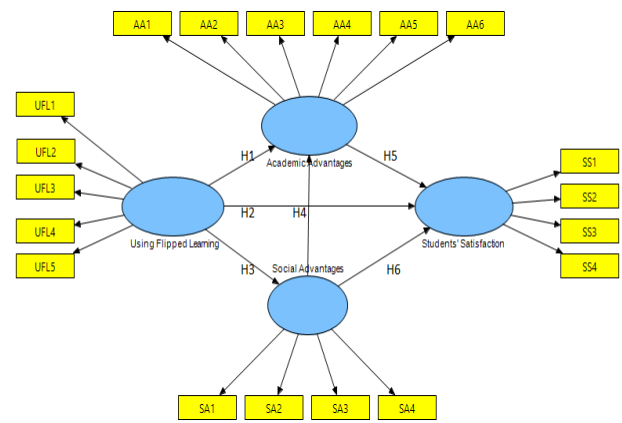

Figure 1: Research Model

2.1 Flipped interactive learning
Interactive learning is a complex process that involves a multiplicity of variables and interactions all of which affect and shape the results of the process. These variables include the most apparent ones, such as the teaching and interactive learning practices that happen in the classroom and the relationships between learners and teachers, to a very complex web of relationships involving institutional practices, national education policies, and social traditions and behaviours. Considering such complexity, it is understandable that for centuries philosophers, researchers, and educators have been trying to find methods and approaches that can facilitate interactive learning and lead to better achievement results. The flipped interactive learning approach is one of such attempts. Street et al. (2015), point out that there is no single and definition of a flipped classroom. Instead, it is the pattern of pre-class and post-class activities that helps us understand and conceptualize it. Flipped interactive learning has been defined as an approach in which teacher led instruction is delivered *before* the classroom event by using new technology tools as a preparation for the face to face instruction. The teacher or lecturer thus provide content input using video or audio podcast digital tools which students are expected to access independently outside the classroom. This may or may not be couple with other online interactive learning tools. The classroom time is then devoted to peer interactive learning, problem solving, discussion, and clarification (Abeysekera & Dawson, 2014; DeLozier &Rhodes, 2017; Pierce &Fox, 2012). Although the flipped lesson started in the secondary school context, it rapidly gained thrust in higher education contexts as universities around the world search for technologies that address the issues of growing number of students and the need to find cost-effective teaching practices. The flipped lesson has also been seen as a way of promoting student engagement in a digital environment that constantly competes for individuals' attention. O'Flaherty and Phillips (2015) conducted a review of articles on the use of flipped interactive learning in higher education context in which they identified 28 relevant empirical studies, 23 of which were conducted the United States. In terms of student engagement and academic achievement, their findings show that such studies mostly argue that 'the flipped model enhanced the interactive learning

experience and promoted student empowerment, development and engagement' promoted independent interactive learning, and the development of communicative and interpersonal skills (2015:89). However, they found no conclusive evidence from the reviewed studies that flipping lessons leads to long term improved interactive learning outcomes compared to traditional lecture style delivery. There was also no evidence that flipping an entire course or module was more advantageous than flipping selected sessions during an academic term. It must be emphasized that most of the literature in the field of flipped interactive learning in university settings still comes from Western countries, especially the US. There is therefore a considerable gap in our knowledge of how such approach can be implemented and, above all, how it is perceived by lectures and students culturally accustomed to more traditional lecture style instruction. Issues such as the kind of activities proposed, students' lack of engagement with the pre-class activities, and students' familiarity with technology have only be briefly addressed.

H1: The relationship between UFL and AA.
H2: The relationship between UFL and SA.
H3: The relationship between UFL and SS.

2.2 Social Advantages

This study aims to continue this discussion and contribute to our understanding of students' perceptions of the use on the flipped classroom in terms of social skills and academic achievement in the largely lecture style dominated Saudi university context. Classroom face to face situations are then used to encourage students to critically engage with content by using manipulation of materials and social interactions. In addition, the new knowledge received via the pre-lesson input can thus be connected with the students' previous experiences and previous knowledge (Çakir, 2008). Both the flipped lesson and the cooperative approach seem to agree that there are some key principles that need to be observed in order to achieve successful interactive learning: positive interdependence, individual accountability, group interaction and social skills (Johnson & Johnson, 2014; Slavin, 2011). Learner autonomy can work at the individual level but also emerge within the social context (Smith, 2008). Kohonen (1992: 48) argues that autonomy 'includes the notion of interdependence that is, being responsible for one's conduct in the social context: being able to cooperate with others and solve conflicts in constructive ways'.

H4: The relationship between SA and AA.
H6: The relationship between SA and SS.

2.3 Academic Advantages

Constructivism is a theory of interactive learning that argues that knowledge is not dependent only on input but has to be internalised (Schunk, 2014). Such internalization is seen as dependent on social interaction and the creation of a positive, active, and organized interactive learning environment (Mittendorf et al., 2005; Vygotsky, 1978). Constructivism places great emphasis on the role of the students to build their knowledge through articulation, reflection, collaboration, exploration, and problem solving activities (Muijs &

Reynolds, 2011). The role of the teacher is then to model, provide scaffolding, and support students while they perform their tasks. Constructivism is therefore in contrast with long established teaching practices that put greater emphasis on the active role of the educator as the individual responsible for bringing the content of the lesson to learners by using whole-class delivery (Muijs & Reynolds, 2011), setting the interactive learning aims, and informing students of what they are expected to attain (Moore & Hansen, 2012). In Higher Education contexts around the world, knowledge delivery in the form of lectures to whole groups of students is still a common and largely employed teaching approach. However, in most Western universities considerable emphasis has also given to knowledge construction and institutions tend to combine lecture style delivery with seminar sessions where students are expected to have a more active role in developing their interactive learning (Ferreri & O'Connor, 2013; Alhussain et al., 2020). It has been argued that academic interactive learning and research is highly dependent on students' ability to learn independently, work collaboratively, and think critically. The flipping lesson approach adopted by some lecturers and departments is seen as a way of achieving these goals.

H5: The relationship between AA and SS.

2.4 Students' Satisfaction

Proponents of such approach argue that it fosters student critical engagement with the content (Barkley, 2010; Bryson &Hand, 2007) and allow for greater student ownership of and responsibility for interactive learning, which in turn would result in higher levels of achievement and greater student satisfaction (Mason, Shuman, &Cook, 2013; Wilson, 2014). An attempt to fill in such gap is made by Alamri (2019), who investigated students' achievement performance and satisfaction in an education technology course in a Saudi university. Participants in his study consisted of male undergraduate students from different disciplines attending different academic years. The author reports largely positive outcomes, especially in terms of student satisfaction.

III. RESEARCH METHODOLOGY

This research used a mixed-method approach the data collected individual semi-structured interviews from 6 students, and 90 undergraduate trainee teachers who were randomly divided into two groups (pre-test and post-test) 30 students they using flipped interactive learning and 60 in the lecture style control group, quantitative structural equation modelling (SEM) Smart-PLS 3.0 was employed to analyse the results. The selected research model included undergraduate students to using flipped interactive learning with other factors such as (academic advantages, social advantages, and students' satisfaction) to increasing achievement of students. The data were obtained using 5-point Likert scales, the questionnaire that was physically circulated asked all respondents to provide feedback on the using flipped interactive learning and their opinions about its influence on students' satisfaction and turn in increasing achievement of students. The data were collected randomly from King

Faisal University, and analyzed using IBM SPSS and Structural Equation Modeling (SEM-Smart PLS). These are considered the most important statistical methods in our study and consisted of two stages. In the first, the validity of measures, measure convergence validity, and discriminant validity of the measure were conducted, and the structural model examination was performed in the second. This method was suggested by Hair et al. (2017). The sample size representative of the farmers in this study is 90 undergraduate students. It is determine based on the Krejcie and Morgan's sample size calculation which same as using the Krejcie and Morgan's sample size determination, which expressed as below equation (Krejcie & Morgan, 1970). The Krejcie and Morgan's sample size calculation was based on p= 0.05 where the probability of committing type I error is less than 5 % or p<0.05. $S=X^2 NP(1-P) \pm d^2 (N-1) +X^2 P(1-P)$. whereby (S) is the required sample size, (N) the population size, (P) represents the population proportion (assumed to be 0.50 since this would provide the maximum sample size). (d) is the degree of accuracy expressed as proportion (0.05) and (X^2) is the table value of chi-square for 1 degree of freedom at the desired confidence level (0.05).To examine the impact of flipped leaning classroom on undergraduate students' academic achievement, the data collected from student academic achievement test scores was analyzed using independent sample T-test to identify the mean scores and statistical differences across the control and experimental groups (Patton et al., 2009). In addition, Cohen's d effect size was employed to estimate the standardized difference between variables and means (Hall&Cohen, 1988; Creswell, 2010).

3.1 Measurement Instruments and Data Collection

As mentioned previously, 110 sample questionnaires were distributed among the students during the September 2019 semester, and 90 of the collected copies were analyzed. using flipped interactive learning ten items was adapted from (Bergmann & Sams, 2012), academic advantages six items was adapted from (Al-Rahmi et al., 2020a; Al-Maatouk et al., 2020), social advantages four items was adapted from (Çakir, 2008), and students' satisfaction four items was adapted from (Al-Rahmi et al., 2019a,b; Al-Rahmi et al., 2020b; Alamri et al., 2020).

IV.   RESULTS AND ANALYSIS

The result of Cronbach's Alpha reliability coefficient was 0.927 of the (using flipped interactive learning, academic advantages, social advantages, and students' satisfaction). The evaluation of discriminant validity (DV) was conducted through the use of three criteria namely: index among variables which should be below 0.80 Hair et al. (2017), the average variance extracted (AVE) value of each construct that needs to be equal to or above 0.50, and square of (AVE) of each construct that has be above, in value, then the inter construct correlations (IC) connected with the factor Hair et al. (2017). Furthermore, crematory factor analysis (CFA) results with factor loading (FL) should be 0.70 or over

while the results of Cronbach's Alpha (CA) are agreed to be ≥ 0.70 Hair et al. (2017). The researchers also add that composite reliability (CR) should be ≥0.70.

4.1 Measurement Model and Instrumentation

The beginning stage in the assertion of the legitimacy and dependability of the model is the use of the Partial Least Square. Basic Equations Modeling (PLS-SEM), Smart PLS 2.0. Preceding the theories were tried, two phases were used to affirm the fitness model's integrity. In like way, build legitimacy that spreads components loadings; composite unwavering quality, Cronbach's alpha, and merging legitimacy was determined. The recommendation gave by (Fornell & Larcker, 1981) in light of making use of the standard test to affirm discriminant legitimacy was used.

4.2 Construct Validity of the Measurements

Develop legitimacy is delineated as the level to which the things used to gauge a component can appropriately quantify the idea they were meant to quantify Hair et al. (2017). The entire things used to gauge the develops should stack essentially to their individual develops rather than different builds. This was guaranteed by leading an orderly audit of writing in the mission to deliver things that have as of now been set up and tried by earlier writers. On the premise of the component analysis, it was affirmed that things were reasonably named to them develops as they showed high loadings on them stood out from various develops (See Table 1).

Table 1: Factors Loading and Coross-Loading of items

Factors	Items	AA	SA	SS	UFL
Academic Advantages	AA1	0.740728	0.392476	0.342729	0.408588
	AA2	0.786971	0.376125	0.312155	0.393504
	AA3	0.753675	0.349519	0.289269	0.337829
	AA4	0.776729	0.358492	0.307316	0.364842
	AA5	0.779912	0.334458	0.339314	0.404443
	AA6	0.743769	0.414379	0.449658	0.581638
Social Advantages	SA1	0.436269	0.851626	0.592980	0.488962
	SA2	0.350110	0.829890	0.587812	0.455237
	SA3	0.418033	0.842811	0.576715	0.485707
	SA4	0.427374	0.813884	0.670639	0.527543
Students' Satisfaction	SS1	0.372728	0.667827	0.828680	0.536120
	SS2	0.376314	0.545030	0.737464	0.420281
	SS3	0.363768	0.568290	0.845654	0.508983
	SS4	0.349200	0.543780	0.785951	0.499415
Using Flipped Interactive learning	UFL1	0.488809	0.500550	0.529571	0.836823
	UFL2	0.439499	0.465864	0.510725	0.842745
	UFL3	0.412061	0.336080	0.402832	0.698448
	UFL4	0.448522	0.533296	0.517156	0.832210
	UFL5	0.481399	0.528068	0.529236	0.841959

4.3 Convergent Validity of the Measurements

Cronbach values contrasting from 0.870042 to 0.812384, over the prescribed cut-off estimation of 0.60, with the composite reliability values differed from 0.906171 to 0.876817 and they are everywhere throughout the prescribed cut-off estimation of 0.70. In addition, the normal change removed (AVE) values contrasted from 0.696681 to 0.583465 (all surpassed the cut-off estimation of 0.5), with critical element loadings

surpassing 0.50. These qualities all went over the prescribed an incentive by Hair et al. ,2017; Fornell & Larcker, 1981). Table 2 presents the CFA results of the measurement model.

Table 2: Convergent Validity

Factors	Items	Factors Loading	Composite Reliability	Cronbach's Alpha	AVE	R Square
Academic Advantages	AA1	0.740728	0.893614	0.858377	0.583465	0.353014
	AA2	0.786971				
	AA3	0.753675				
	AA4	0.776729				
	AA5	0.779912				
	AA6	0.743769				
Social Advantages	SA1	0.851626	0.901814	0.854977	0.696681	0.346119
	SA2	0.829890				
	SA3	0.842811				
	SA4	0.813884				
Students' Satisfaction	SS1	0.828680	0.876817	0.812384	0.640853	0.586732
	SS2	0.737464				
	SS3	0.845654				
	SS4	0.785951				
Using Flipped Interactive learning	UFL1	0.836823	0.906171	0.870042	0.659958	0.000000
	UFL2	0.842745				
	UFL3	0.698448				
	UFL4	0.832210				
	UFL5	0.841959				

4.4 Discriminant Validity of Measures

The level to which an idea and its pointers go astray from another idea and its markers is surveyed by discriminant legitimacy (Bagozzi, Yi & Nassen, 1998). The AVE esteem is well over 0.50 and is critical at p=0.001 and this shows that discriminant legitimacy is bolstered for the whole builds ((Fornell & Larcker, 1981). In such manner, Hair et al. (2017)clarified that the relationships between things in two develop ought not to surpass the square base of the normal fluctuation shared by a solitary develop's things (See Table 3).

Table 3: Latent Variable Correlations

Factors	Academic Advantages	Social Advantages	Students' Satisfaction	Using Flipped Interactive learning

Academic Advantages	1.000000			
Social Advantages	0.490667	1.000000		
Students' Satisfaction	0.456098	0.729879	1.000000	
Using Flipped Interactive learning	0.559602	0.588319	0.616181	1.000000

4.5 Analysis of the Structural Model

Taking after the assurance of the integrity of the demonstrated estimation, the following stride involved the testing of the conjectured connections among the builds. The specialist utilized the Smart-PLS 2.0 where the model was analysed by leading the PLS calculation. The way coefficients were then delivered as portrayed in Figure 2. Figures 3 what's more, show the theories on table 4.
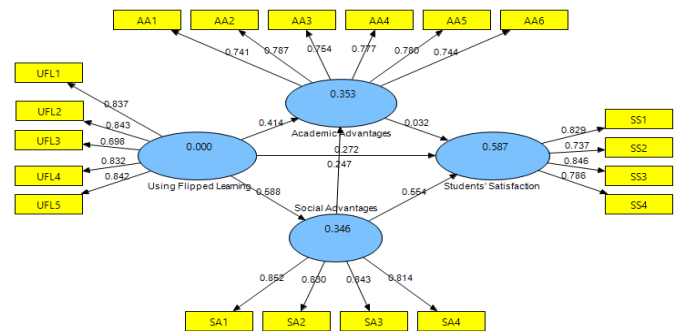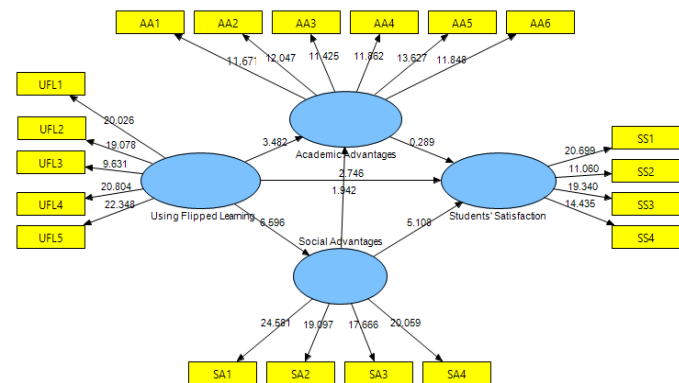

Figure 2: Path Coefficients Results

Figure 3: Path Coefficients T Values

Table 4: Hypotheses testing

H	Independent	Relationship	Dependent	Path Coefficient	Standard .E	T. Value	Result
1	UFL	→	AA	0.414346	0.118981	3.482466	Accepted
2	UFL	→	SA	0.588319	0.089191	6.596186	Accepted
3	UFL	→	SS	0.272469	0.099225	2.745967	Accepted
4	SA	→	AA	0.246900	0.127161	1.941626	Accepted
5	AA	→	SS	0.031806	0.109994	0.289163	Accepted
6	SA	→	SS	0.553974	0.108458	5.107741	Accepted

Regarding the hypothesis number one, the relationship between using flipped interactive learning and academic advantages (β=0.414346, t=3.482466), was accepted. The

next hypothesis the relationship between using flipped interactive learning and social advantages (β=0.588319, t=6.596186) was accepted. The third hypothesis the

relationship between using flipped interactive learning and students' satisfaction advantages (β=0.272469, t=2.745967), was accepted. Similarly, the relationship between social advantages and academic advantages (β=0.246900, t=1.941626). Therefore, hypothesis number four was accepted. The fifth hypothesis the relationship between academic advantages and students' satisfaction (β=0.031806, t=0.289163), was accepted. Finally, hypothesis number six the relationship between social advantages and students' satisfaction (β=0.553974, t=5.107741), was accepted.

4.6 Findings of Undergraduate Students' Academic Achievement

Regarding to answer the first question of this research, which is related to the impact of flipped interactive learning on undergraduate students' academic achievement in comparison with lecture style? Firstly, we compared between the control and experimental groups to determine any statistical differences. Based on the results in Table 5, which indicated that the mean values of the undergraduate students in the experimental group (M=21.65, SD = 2.784) was higher than that of the control group (M=20.01, SD = 2.962). This means the interval of the mean between the two groups is 1.64. This result indicates that the different treatments given to the experimental and control group had a significant effect on the result of the mean. Moreover, the results indicated that the standard deviation scores of the control group is 2.962, while the standard deviation scores for experimental group is 2.784. This indicates that the mean of the students taught through flipped interactive learning was better in describing all values. According to the results of Cohen's d effect size estimate of .335, which indicates that the significance of the score differences between the control and experimental groups is small (Cohen et al., 1992).

Table 5: Distribution analysis of data measured in post-test

	Mean	Standard Deviation (SD)	Variance
Experimental Group	21.65	2.784	7.762
Control Group	20.01	2.962	8.651

In this research, hypothesis testing was conducted using inferential statistical analysis. An independent sample test (t-test) was used for testing the hypothesis in order to identify whether there was a significant difference in achievement between the students taught using a flipped classroom and students taught using lecture style. The data was analysed using SPSS 21.0 at a 5% level of significance. There are two indications was used to determine whether the hypothesis is accepted or rejected. The first indication, if the values of tcv (t-critical value) was lower than tobs (t observed), the null hypothesis would be rejected and alternative hypothesis accepted. While, if tcv was more than tobs, the null hypothesis would be accepted and alternative hypothesis rejected. Table 6 presents the results of Sig value (2-tailed) was 0.015, which means that the observed level of significance (Sig. [2-tailed]) was less than the standard alpha level (α = 0.05). After calculating the result, the

hypothesis testing was examined in terms of tobs and tcv. To analyse the t-test, the value of tobs was compared with tcv to measure whether the mean scores of the two groups were significantly different. In addition, for the equal variances assumed, tobs was 2.752. Based on Table 6, the t-critical value for degrees of freedom (df) 52 was 2.0092. Therefore, the comparison between tobs and tcv was 2.752 > 2.0092 because the value of tobs was higher than that of tcv. Thus, the null hypothesis (H0) was rejected and alternative hypothesis (Hα) was accepted. Consequently, it could be concluded that there was a significant effect of using a flipped classroom in terms of student achievement, and the students in the experimental group demonstrated better performance than did the control group in terms of student achievement.

		Levene's test for equality of variances				t-test for equality of means			
		F	T	df	Sig.	Mean	St. error	Lower	Upper
Score	Equal Variances assumed	.122	–2.752	52	.015	–2.154	.875	–3.964	–.495
	Equal variances not assumed	.750	–2.752	50.7	.015	–2.154	.875	–3.964	–.495

Table 6: Results of independent sample test (t-test)

V. STUDENTS' SEMI- STRUCTURED INTERVIEWS

The main aim of the interviews to gain deep understanding of the students' responses in the questionnaire and to know about problems that students face in flipped interactive learning classroom the interviews conducted with six students, the outcomes from the interviews as following:

Academic advantages…Help to use flipped interactive learning approach with students in the future...student number two said…. he could not forget this approach because he taught by using flipped interactive learning and this helped him to understand this method well and he like to use it. Also, student number one said… there are many benefits by using flipped interactive learning. Therefore, from the finding of this research we suggested to use flipped interactive learning with students in the future. Academic advantages…understanding of the content...student number three said... after watching videos and read material at house, he can discuss the information regarding lesson content with his classmates and this help him to gain deep understanding and extent knowledge better than lecture style. Academic advantages…Thinking skills…student number five… said the using flipped interactive learning is useful and encourage students to more thinking about what he read at the house and arrange his ideas in order to discuss them with his friends in the class. Retention of the lesson content (memory)…student number one said...that in the exam, he does not need to spend much time to prepare for the exam because the information in his mind by using flipped interactive learning but when he listens to the teacher in the class he easy to forget the information so fast and he could not remember them. Also, student number two said...by using flipped interactive learning he

searches about the information and easy to find them by his self so it is difficult to forget them. Increasing students' motivation to interactive learning … student number four said... When he read the material and watch videos at house by using flipped interactive learning, he will enthusiastic to go class to discuss and cooperate with classmates to check each other understanding. While in the class said he feel bored and sleepy. Participating in the lecturer… student number two said...in lecture style, he feels bored and some student play with their phones but in flipped interactive learning, he noted students are active and participate in interactive learning process. Encourage to an autonomous learner…student number six said...he learns researcher skills and he do not need to rely on his teacher to understand the lesson content. Also, he learns the lesson content by his self at house and make sure about his understanding when he discusses with his friends and the teacher in the class.   Interpersonal relationships…student number four said...through using flipped interactive learning, he can make new relationship with new students who have not known them before and have good relationship with them. Thus, there is an opportunity to cooperate with them and know each other when we cooperate and discuss to understand the lesson content. While, student number one said... through lecture style, he has to be silent and listen to the teacher. So, during the lesson time he could not say any word. Student number three said... some students create group in the wats up to discuss the material and this help them to know each other. Increasing self-esteem…student number one said...in lecture style lesson, he was worried to be asked by the teacher any question regarding the lesson content but in flipped interactive learning lesson, he learn the material by his self at home and check his understanding with classmates so he feel confident. Increasing enjoyment in interactive learning… student number six said…by using flipped interactive learning, the lesson time goes fast without feeling the long time of the lesson because he was enjoying when he discusses the lesson content with his classmates instead of passively listen to the teacher, however, in lecture style he feels the lesson time is too long. Improving communicative skills…student number two said…by using flipped interactive learning, students need to discuss with each other regarding the lesson content. So, we learn that we should listen to each other. Also, each student should have the opportunity to talk and we learn how justify for our opinions. In lecture style lesson, there is no place for all that. Easy to learn anywhere…student number five said…lecturers send the material and videos online and this help him to learn anywhere by using my mobile. Sometime when he wakes at university or in the café, and It is easy and he like this approach. Teacher's role…student number three said in lecture style lesson, the teacher control and dominates the lesson. But, by using flipped interactive learning, the teacher is observer students when they discuss with each other. This situation creates good environment for interactive learning. Student number six said in lecture style lesson, the teacher is the only speaker and very few students focus with him. But, by using flipped interactive learning lesson, all students participate and active the teacher is supervisor only.

Cooperation…student number one said the main advantage of using flipped interactive learning approach is that we cooperate with each other to understand the lesson content. It is much better than learn individually. Also, student number four said cooperation among students create good environment for interactive learning and flipped interactive learning approach lead to help each other to improve our knowledge.

In summary the issues with using flipped interactive learning approach as following: Spending much time at house for interactive learning… student number two said at home, he has to spend much time more than before in order to watch videos that you send to us and read some material regarding the subject that we are going to discuss about in the class. And he does not need to spend that time with lecture style method. Un suitable chairs and tables for flipped interactive learning… student number four said the chairs and tables are not suitable for flipped interactive learning. And the chairs and tables are fixed on the floor and this could not help students to discuss with each other, because they need to see each other. Therefore, he thinks these chairs are suitable for lecture style "normal class".

5.1 Discussions and Implications

The current study aimed to clarify the factors which effects using flipped interactive learning amongst organizations of higher education in Saudi Arabia. Consequently, the hypotheses investigation of the study has been performed. Thus, based on the p-values, path coefficients, and significance of the t-values, the suggested study hypotheses were then examined for acceptance or rejection. Furthermore, these associations are in line with the prior researches besides with all the other mentioned indicators present fundamental endorsement for the conclusion that the model of using of flipped interactive learning for sufficient construct validity.Using flipped interactive learning to teach students-teacher Teaching Method Module (TMM) in pre-service programme at university is better and more effective on students' achievements than lecture style that is considered the main teaching method in the university and in traditional context. Also, this research fills the gap and developed a new model on using flipped interactive learning context Saudi Arabia higher education. The finding of this research showed an advantages (Academic and Social) in Saudi context it was a significant and positively, in turn in increase students' achievements. So, it is good when you mentioned about that and said autonomy and critical thinking are good for interactive learning but to what extent flipped interactive learning in Saudi context and in general lead to this as new knowledge to the literature and this showed in the findings of this research as a new contribution of knowledge. The results showed the student used flipped interactive learning in pre-test and post-test with more understanding on using flipped interactive learning in turn in increase students' achievements. In this research we taught students in pre-services education by using teaching methods such as flipped interactive learning help them to use it when they go to university. Also, in the findings from interviews students mentioned some

difficulties when use this approach and these new things should be considered in the future when use this teaching method. Finally, the research model tested an actual use of flipped interactive learning to effects both academic advantages and social advantages in turn in increase in increase students' achievements, all six hypotheses of research model were accepted. Therefore, the research implications as following:

- The lecturers should be trained on using new technology that help them to send the contents of the lessons and audio and video to their students such as BlackBoard and some applications for iPad or iPhone and so on before classes.
- The lecturers at university should be trained to use flipped interactive learning approach in their lessons because of its benefits academic and social on students.
- The time of the lecture should be suitable for using the approaches that focusing on students' discussing such as flipped interactive learning because these approaches need more time than other approaches such as lecture style that focus on teacher and delivering information.
- The curriculum at the university for preparing teacher such as teaching strategies should be improving and adding flipped interactive learning approach as effective teaching strategies.
- The chairs and tables for classroom should be flexible to change for group and pair discussion and group working.

5.2 Conclusion and Future Work

The current research aimed to develop a new model and reduce the dissimilarities in the literature regarding the use of flipped interactive learning approach on undergraduate students' academic achievement as well as students' perceptions of its effects on their interactive learning in higher education in Saudi Arabia. Consequently, the hypotheses investigation of the study has been performed. Thus, based on the p-values, path coefficients, and significance of the t-values, the suggested study hypotheses were then examined and all hypotheses was accepted. Moreover, this research applied interviews to gain deep understanding of the students' responses in the questionnaire and to know about problems that students face in flipped interactive learning classroom the interviews conducted with six students. Quantitative and qualitative results are consistent with the research model was developed.Furthermore, these associations are in line with the prior researches besides with all the other mentioned indicators present fundamental endorsement for the conclusion that the model of using of flipped interactive learning for sufficient construct validity. Therefore, this research indicates that using flipped interactive learning increasing achievement of students through academic advantages, social advantages, and students' satisfaction. The model developed by this research is recommended be employed as a supportive tool for investigation the utilization of flipped interactive

learning to enhance students' satisfaction and students' achievement other higher education institutes.Faculty and staff of higher education institutes need to take practical steps to further the communication and interactive learning through the proper utilization of flipped interactive learning to enhance students' satisfaction and students' achievement. This research limitation could establish prospects for research in the future which by expanding the sample size to be more comprehensive. Future scholars are recommended to consider different interactive learning style perspective or the interactive learning theory followed by different institutions, and also to include further influential factors related to perceived trust, perceived risk or any other interactive learning factors and moderating variables to achieve more extensive understanding university students' acceptance of flipped interactive learning in higher education institutes.

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VI. REFERENCES

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