Does Student-Instructor Interaction in Universities Influence Academic Attainment?:

The Context of Saudi Arabia

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Abstract

This study investigated in the Saudi Arabian context the relationship between student-instructor interaction and students' academic attainment. A survey secured reports from university students (total *n* = 167) of their age, gender, interactions with instructors, and cumulative grade mean score for the previous three semesters. The results indicated a significant positive relationship between student-instructor interaction and student academic attainment. These findings have implications for teaching practices and suggest a need to implement a facilitative, interactive style of teaching, instead of relying on conventional instructor-centered teaching, both within and outside the classroom. We identify limitations of the current research and suggest directions for future research, with reference to the Saudi Arabian university context.

Keywords: Academic attainment, student-instructor interaction, gender, age, Saudi Arabia

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It may be argued that the primary goal of education—for students, instructors, parents, and others, regardless of educational grade or level—is the attainment of vocational/technical skills. However, the extent to which learning is effective (i.e., attainment of vocational/technical skills is achieved) may be influenced by a range of factors related to the student and the learning environment. The current study explores the nature and influence of such factors, and the extent to which teaching practice can, and perhaps should, be adjusted in light of them. In this study, effective learning refers to the successful application of evidence-based teaching strategies, implemented to generate positive and sustained results in students. In the current study, effective learning is assessed by academic attainment (i.e. grades), and we therefore use these two terms interchangeably.

The current study focuses on undergraduate students and thus considers attributes linked to universities and tertiary institutions such as faculties, age, and complex discussion groups. Although many such studies have been conducted around the world, very few have been conducted in Saudi Arabia. The current study tests the broad hypothesis that interaction between students and instructors leads to effective learning and, ultimately, improved academic performance. Although we appreciate that this might be viewed as a relatively reductive view of education, it is framed to afford a broad assessment of this hypothesis, which is founded on the argument by Komarraju, Musulkin, and Bhattacharya (2010) that students who interact more frequently with their instructors are more motivated and active during classroom activities. The student-instructor interaction can be explained using Moore's framework (see Martin & Bollinger, 2018), which identifies different classroom interactions, namely learner-instructor, instructor-content, and learner-content (Martin & Bolliger, 2018). The current study investigates how learner- or student-instructor interaction occurring within the classroom or even outside the classroom affects academic attainment.

Subsequent sections of this article contend that interactions occurring within and outside the classroom, between students and instructors, are not isolated from other factors such as faculty expectations. Some faculties are constituted such that they do not encourage student-to-instructor interactions; for example, they may be rigidly hierarchical. The extent to which such variables interact to

affect learning outcomes has not previously been investigated in a Saudi Arabian context. Thus, the current study may inform teaching approaches and practices of instructors in tertiary education, with special attention to the Saudi Arabian context. Specifically, the results of the current study suggest a need to shift from the traditional model of teacher-centered learning to a more student-centered, facilitative style of teaching that focuses the core of the learning on the student (Keiler, 2018).

Literature Review

Interactions and Contributions in Class

Interactions that occur among, and contributions that are made by, undergraduate students during classes can be important indicators of students' and instructors' performance and learning quality. Interactive and more engaged students learn more than less engaged students; active participation in the classroom has positive effects on learning (Johnson, 1981; Cox & Orehovec, 2007). According to Tofade, Elsner, and Haines (2013), active class participation is important for the development of higher-level thinking skills, i.e. thinking that goes beyond a simple understanding of the text. Class interactions generally take three forms, namely between students, between students and instructors, and between students and the content. The current study focuses on interactions between students and instructors as contextual factors that may affect the learning process.

The extent of classroom interactions and contributions in the classroom depends, in part, on the approach to learning. Cardoso et al. (2011) describe the traditional teaching approach whereby instructors are the focal point of learning processes while students adopt a passive role, noting that this makes it difficult for interactions and student contributions to occur. Some scholars suggest that alternative methods of teaching, including methods that facilitate high-level interactions in the classroom, should be encouraged. For example, Tofade, Elsner, and Haines (2013) argue that instructors often use questioning techniques to assess how students are assimilating and processing information, and suggest that instructors might instead use questions to generate discussions and student-to-student interactions as a way of stimulating higher-order learning that requires analysis of information and the connection of disparate concepts.

Some ideas around classroom interactions and contributions are based on Bandura's social cognitive learning theory. This theory posits that three foundations are necessary for learning to occur;

these are related to the classroom setup, cognitive factors, and behaviours of students and instructors (Cardoso et al., 2011). Based on Bandura's theory, classroom interactions depend, in part, on the dynamics of the teaching process as well as the student's cognitive and emotional attributes. For instance, personal attributes and traits of instructors and students, such as empathy and kindness, are important for establishing a positive mood in the classroom (Cardoso et al., 2011).

Johnson (1981) studied student-instructor interaction and found that it supports cooperation and collaboration among students. Johnson also found that collaborative learning promotes socialization and interpersonal development among students. Collaboration can take many forms in the learning process, including sharing ideas, providing insights, and working towards a common goal. Collaborative learning is a key component of project-based learning (Le, Janssen, &Wubbels, 2017).

Moore, Warner, and Jones's (2016) study addresses the impact of generational differences among students, finding that millennials favor team-based and collaborative approaches, whereas baby boomers prefer a more passive approach to learning, e.g., through lectures. The differences among students across generations reflect the learning approaches employed by instructors during each cohort's period of learning. For example, the traditional mode of learning, which is instructor-based or instructor-centered, may explain why baby boomers favour passive learning. Generation Z and millennial generations, on the other hand, are accustomed to online learning that supports group discussions and forums, facilitating more active learning (see Moore, Warner, & Jones, 2016, for additional discussion).

Students' Interactions with Instructors

Conventional teaching approaches are characterized by lecturing that is passively processed by students, with only occasional opportunities for students to actively interact with the instructor and with each other. The degree of student-instructor interaction in the classroom depends, in part, on the instructor and his or her teaching approach (e.g., Kim & Sax, 2009).

Most research in this area focuses on whether more interaction between students and instructors in the classroom leads to effective learning. Kim and Sax (2009) found that getting students involved and interested in learning requires instructors to be open-minded and flexible. The same study reported a correlation between the relationship between instructors and students and a student's overall performance. For instance, positive student-instructor interaction creates a non-threatening environment

that enhances learning outcomes (Keiler, 2018). Such interactions are productive when there is open communication between the instructor and students, and when students are given some freedom to engage with the instructor. For effective learning to occur, the classroom should function in a way that allows students to express their doubts and interrogate ideas (Keilor, 2018).

Rahman et al. (2020) studied the impact of student-instructor interaction on student motivation and found that the main variable in the classroom is not the student, but the instructor. The researchers contend that effective instructors have high expectations of their students and themselves (Rahman et al., 2020). Li and Yang (2021) established that classrooms that encourage positive cultures with frequent collaborations can motivate students to direct their energies and aspirations to attain their goals. Lack of instructor engagement in the classroom can produce the opposite effect, such that students are less motivated and show poorer concentration as well as decreased participation.

Student-instructor interaction also includes instructor feedback and comments. Martin and Bolliger (2018) found that students rated thorough and timely instructor feedback on their tasks as highly important; such feedback was critical to helping students improve their performance. Li and Yang (2021) also documented that a highly interactive classroom facilitates active participation of students and their development in areas of interpersonal interaction including teamwork and group discussion.

Faculty Support

Within academia, faculties are a group of university departments concerned with a specific field of knowledge. When undergraduates enter university, they typically affiliate with a faculty such as the arts, medicine, business, or science. Research by Komarraju, Musulkin, and Bhattacharya (2010) found evidence that when a student's academic and extracurricular performance improved due to having a good relationship with a single faculty member, that relationship could lead to higher-level career aspirations after graduation. The study further established that although most interactions occur in a classroom setting, students who extend this interaction beyond the classroom are more motivated and satisfied. This finding is supported by Kim and Sax (2009), who reported that out-of-classroom engagement between students and the instructor positively affected student performance, attitudes, and beliefs.

Li and Yang's (2021) study established that interactions between the instructor and students affect the motivation of undergraduate students. Similarly, Cox and Orehovec's (2007) study of

instructor-student interaction outside the classroom identified a link between the quality and quantity of out-of-classroom interaction between students and instructors, and student outcomes, particularly grades. In addition, the study found that positive non-academic interactions can influence students' perceived integration into the university's academic and external community (Cox & Orehovec, 2007).

Several categorical demographic variables—including age and gender—may be related to how students interact with instructors. Kim and Sax (2009) investigated student-instructor interaction in terms of student gender, age, race, and social-economic status, and discovered that gender affected the level of interaction. For instance, male students tended to become active in political affairs and other social activities when interacting regularly with instructors. In contrast, female students experienced benefits linked to their emotional, psychological, and economic interests with more interaction with instructors.

Interactions between instructors and students are important for creating strong connections that arise from advising and mentoring (Komarraju, Musulkin,&Bhattacharya, 2010). However, students are more likely to initiate interaction with instructors who are sociable, likable, flexible, and supportive (Martin &Bolliger, 2018). Students that interact with instructors more regularly are given feedback and show progress in communication, competency in coursework, and insight regarding prospective careers (Cavinato et al., 2021).

Conceptual Framework

The impact of student-instructor interaction on the learning process and performance can be explained using the Chickering and Gamson (1987) framework that specifies seven key practices that undergraduate students employ. The principles identified in this framework indicate that students are more active when the following elements are found in teaching approaches (Martin & Bolliger, 2018): (1) more contact between students and instructors; (2) more opportunities for students to work in cooperation; (3) more encouragement of students to use active learning strategies; (4) more prompt feedback provided by instructors; (5) adequate time provided by instructors to complete academic tasks; (6) higher standards for academic work demanded by instructors; and (7) instructors addressing specific student needs during learning.

The Current Study

The goal of the current study was to explore in the Saudi Arabian context how student-instructor interaction within a university may affect academic attainment. The general hypothesis is that greater interaction between students and instructors during academic instruction or extracurricular activities leads to effective learning.

Methodology

The goal of the research was to evaluate the associations between student-instructor interaction and academic attainment among Saudi Arabian university students. Gender and age variation also were explored. To achieve this, there was a need to obtain basic information from students. Consequently, the planned research area (geographical location), research plan, population, sample size, sampling method, means of collecting data, data validity, data reliability as well as processing and analysis are discussed in this section. The study was reviewed and approved by the Research Ethics Committee at King Abdulaziz University (protocol KEP-92-120-42, date of approval: 15/02/2021).

Research Design

A correlational study design was applied since the goal was to explore the link between student-instructor interaction and effective learning/academic attainment. According to Murthy and Bhojanna (2009), correlation is a technique "used to measure the relationship of 2 or more variables" and the extent of the relationship between the two variables is the coefficient of correlation (pp. 238-239). The correlation analysis identifies associations between variables. The current research applied a quantitative approach because it was based on variables measured with numerical figures.

Participants

The study targeted 1st-year students and 4th-year students in two universities in Riyadh, Saudi Arabia, namely King Saud University and Alfaisal University. The goal was to have 75 students participate from each university, whereas the final sample sizes for the two universities were 91and 76, totaling 167 participants. The study sought students from different faculties and that resulted in selection from four different faculties as shown in Table 1 in the next section.

Sampling Procedure and Sample Size

The type of research affects the sampling procedure used. This study employed purposive sampling because we targeted 1st-year students and 4th-year students to ensure a larger range for age than

is typical with university samples. The study also targeted both males and females. Although it is not difficult to recruit student participants between 18 and 24 years of age in universities, we also targeted students older than 30 years who may have returned to university to attain a university education or to conclude their education. Moreover, to measure effective learning, we used self-reported academic attainment assessed as cumulative grade mean scores for the three previous semesters. Participants were stratified based on faculty and gender and age (see Tables 1 and 2). There were more male than female participants and the number of students from each faculty was not equal, providing justification for the stratification strategy. The 167 (111 males, 56 females) students were divided into the four selected faculties. After stratifying the sample, simple random sampling was applied to create equal representative groups that were similar on all applicable variables. The lottery method was used for each faculty to avoid prejudice and give equal participation opportunity to the students.

Table 1: Sampling frame and sampling procedure.

Faculty	Sample		
	Male	Female	Total
College of Social Science	45	18	63
College of Communication &Media	24	17	41
College of Business	25	13	38
College of Science	17	8	25
Total (*n*)	**111**	**56**	**167**

Data Collection Tool

Participants first responded to several demographic questions including their age, gender, and cumulative grade mean score in the previous three semesters. Next, they completed the Questionnaire of Teacher Interaction (QTI; Wubbels et al., 2006; see Appendix), which provides a psychometrically sound assessment of instructor behavior and student-instructor interaction. The QTI requests that respondents report their cumulative grade mean score as outlined in the Appendix. The QTI has 48 items measuring different interactive attributes, but the current study focused on the 25 items relevant to our focal interest in the instructor's traits, attitudes, and behaviors. Examples of items include, "If we don't agree with the

teacher we can talk about it," "The teacher is patient," "The teacher realizes when we don't understand," and "The teacher thinks we can't do things well," which we collected to form the Student-Instructor Interaction Scale (see below). For each item, respondents select the response option that best describes their assessment along a 5-point Likert scale, from "Never" (1) to "Always" (5).

Student-Instructor Interaction Scale

A pilot test was conducted to assess the validity and reliability of the Student-Instructor Interaction Scale. The measures were assessed by two college language instructors for clarity and appropriateness as well as to suggest potential item modifications to facilitate use of a measurement tool appropriate for attaining the goals of the study. Although the QTI has been used successfully for related studies (see citations above), the measure and items were evaluated for clarity of instructions, and directness, clarity, and relevance of items. A total of 15 individuals participated in the pilot study and responded to the 25 QTI scale items. The pre-tested data outcomes were evaluated using SPSS version 16 to determine Cronbach's Alpha for consistency. The outcome of Cronbach's alpha = 0.845 for student-instructor interaction, which signifies a high level of internal consistency for the items.

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Results

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Participant Demographics

Table 2 provides descriptive information on age and gender for participants. There were more male than female participants, and more younger than older participants.

Table 2. Respondents' gender and age.

Respondent Demographic Attributes		Gender		
		Male	**Female**	**Total**
Age	18-24 years	58	33	91
	25-34 years	45	19	64
	35 years and above	8	4	12
Total (*n*)		**111**	**56**	**167**

Student-Instructor Interaction and Academic Attainment

We hypothesized a positive relationship between student-instructor interaction and effective learning of university students as assessed by academic attainment. To test this hypothesis, the respondents were asked to engage in self-assessment and rate their degree of interaction with instructors as stated on the QTI. The QTI also requested self-report of cumulative grade mean score (see Appendix). The Pearson correlation was used to analyze the data and the results are shown in Table 3.

Table 3. Pearson Correlations between Student-Instructor Interaction and Academic Attainment

		1	2
CGMS (1)	Pearson correlation	1	0.2160
	Sig (2-tailed)		0.001
	n	**167**	**167**
Student-Instructor	Pearson correlation	0.2110	
Interaction (2)	Sig (2-tailed)	0.001	1
	n	**167**	**167**

Note: See text for details on variable construction.

As shown in Table 3, and consistent with our hypothesis, student-instructor interaction and academic attainment (CGMS) were significantly and positively correlated. Academic attainment is positively associated with the degree of interaction between students and instructors.

Multiple Regression Analysis

Table 4 summarizes the results of a multiple regression analysis of gender, age, and student-instructor. This analysis did not show multicollinearity, given that all the tolerance values were > 0.1 and VIF values were < 10 (Bors, 2018). The outcomes of the multiple regression indicate that the set of variables predicted academic attainment significantly and positively. Gender, age, and student-instructor interaction jointly explained 7.3% of the variance in academic attainment.

Table 4. Multiple Regression of Gender, Age, and Student-Instructor Interaction on Academic Attainment _(n = 167)._

Variable	SE	β	r	pr^2	spr^2	p-value
Gender	0.080	-0.121	-0.101	-0.014	-0.013	0.56
Age	0.63	-0.052	-0.021	-0.002	-0.0034	0.331
Student-Instructor Interaction	0.111	0.109	0.0434	0.0422		0.01
R^2	0.073					
$AdjR^2$	0.041					
F	2.252		sig 0.016			

Discussion

The main goal of the study was to assess in the Saudi Arabian university context the relationship between student-instructor interaction and academic attainment measured by self-reported grades. We tested the hypothesis that if there is more interaction between students and instructors, then the students would report greater academic attainment. The Questionnaire of Teacher Interaction (QTI; Wubbels et al., 2006) was used to assess student-teacher interaction and self-reported academic attainment. Consistent with the hypothesis, we identified a positive relationship between academic attainment and student-instructor interaction. Bandura's Social Learning Theory can account for this finding, positing that learning processes are enabled by three conceptual factors, namely the environment, cognitive influences, and interactions between students and instructors. Yet, the dynamic nature of these three conceptual factors should not be overlooked, and it should also be considered that one factor could be more potent than another when it comes to influencing the learning process (see Cardoso et al., 2011).

The findings of this research corroborate the results of Murray-Harvey (2010), who found that a student's social, emotional, and academic experience in school is affected by the quality of the relationship and association between the instructor and students. Students that interact more frequently with instructors display more self-governance, actively participate in the classroom, are highly motivated,

and report less stress (Murray-Harvey, 2010). Furthermore, Li and Yang (2021) found that students who report a positive attitude toward their instructors perform better academically. In addition, in the current study we conducted multiple regression analysis to assess whether age, gender, and student-instructor interaction affected academic attainment. The results of the multiple regression indicate that the set of variables predicted academic attainment significantly and positively.

Student age has been considered in several studies of student-instructor interaction and academic attainment. Moore, Warner, and Jones (2016) found that generational differences among students influence how they interact within and outside the classroom, with younger students favoring team-based approaches and older students preferring a more passive approach. In the current study, students between 18-24 years and those above 30 years are of different generations and might be accustomed to different teaching approaches, based on external factors occurring in their respective generations. For instance, an 18-year-old is a digital native, and technological advancements that enable online learning make them more interactive and engaged students than students of previous generations (Moore, Warner, & Jones, 2016).

Some studies have found that gender affects whether and how students interact, to some degree. One should, however, be careful not to stereotype gender. Gender is a peculiar variable because it is, in part, socially constructed, and hence can be affected by factors such as culture and level of education. Gender can be influenced by both inherent (personal) and extrinsic (social/external) factors. A study by Kim and Sax (2009) investigating the roles of gender, race, ethnicity, and socioeconomic status in influencing student-instructor interaction found that male students developed differently from female students when such interaction occurred. For example, males increased their political engagement and became more socially active as a result of such interactions. Females, on the other hand, experienced greater emotional well-being due to the interactions that could be explained in terms of increased motivation. Li and Yang (2021) note that classrooms and institutions that encourage positive cultures with strong collaborations can motivate students to use their energies and aspirations to achieve their objectives.

Conclusions, Limitations, and Recommendations

In summary, the current results indicate that student-instructor interaction significantly and positively correlates with student academic attainment. However, the results must be interpreted with caution and several limitations should be noted. One limitation of the current study is the relatively small number of respondents. Although the sample size was adequate for the reported analyses, small sample size may impede the attainment of results that reach statistical significance. Another limitation is the extent to which these results can be generalized beyond the Saudi Arabian educational and cultural contexts. A geographical location is influenced by social factors such as culture, religion, and unique social/economic factors distinct to it that may affect individuals' behaviors and interactions.

We next suggest several recommendations regarding student-instructor interaction. Based on the results of the current study and previous research reviewed above, future workshops for instructors and university management could facilitate discussion and provide coaching on how to improve the relationship and increase productive interactions between instructors and students. We anticipate that such discussions and training may help to shift teaching approaches from instructor-centered to student-centered. Borrowing from Chickering and Gamson's (1987) framework of practices to employ for successful undergraduate learning, instructors can work to build a culture that facilitates greater contact between students and the instructor; they can create opportunities for students to work in cooperation; and they can work to provide timely feedback to students to thereby support academic success (Chickering & Gamson, 1987).

Second, instructors should be provided with adequate resources and support to fulfill their mandate and meet the needs of students beyond in-class educational instruction. Instructors should be afforded the opportunity to develop several strategies that will assist them in appreciating and understanding the intricacies they are likely to face in their efforts to facilitate interactions with students, especially outside the classroom setting. The bodies governing universities in Saudi Arabia could initiate an awareness training program to provide opportunities for instructors and students to have extracurricular interactions outside the classroom. Such interactions can facilitate successful mentorship and guidance of students.

Moreover, the development of professional learning forums and communities might assist Saudi Arabian university instructors to plan strategies to improve instruction and to secure resources to develop gender-appropriate and culturally-applicable lessons. There is also a need to formulate policies and teaching frameworks underpinned by values that enable teaching but still ensure that cultural values are respected. Some universities solicit and present course ratings on class participation and this should be encouraged. However, the issues that affect class interaction between students and instructors should be addressed so that a conducive learning environment exists for both instructors and students.

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Appendix

Questionnaire (QTI and background information)

Student information:

Please tick the box where appropriate

Example: | ✓ |

1. **How old are you?**

   18-24 [ ]   25-34 [ ]   above 35 [ ]

2. **What is your gender?**

   Male [ ]   female [ ]

3. **What is your university year?**

1st year	2nd year	3rd year	4th year	Other
[ ]	[ ]	[ ]	[ ]	[ ]

4. **What is your cumulative grade mean score for the last three semester?**

95.00-100.00	90.00-94.99	85.00-89.99	80.00-84.99	75.00-79.00
A+	A	B+	B	C+

70.00-74.99	65.00-69.99	60.00-64.99	0.00-59.99
C	D+	D	F

Survey Questions

	Never				Always
	1	2	3	4	5
1. The instructor explains things clearly.					
2. If we don't agree with the instructor, we can talk about it.					
3. The instructor is hesistant.					
4. The instructor gets angry quickly.					

1. The instructor holds our attention. 2. The instructor is willing to explain things again. 3. The instructor acts as if she/he does not know what to do. 4. The instructor is too quick to correct us when we break a rule.					
1. The instructor helps us with our work. 2. We can decide some things in the instructor's class. 3. The instructor thinks that we cheat. 4. The instructor is strict.					
1. The instructor is friendly. 2. We can influence the instructor 3. The instructor thinks that we don't know anything. 4. We have to be silent around the instructor.					
1. The instructor's class is pleasant. 2. The instructor is lenient. 3. The instructor is suspicious. 4. We are afraid of the instructor.					