Data Article

Dataset on the relationships between flipped classroom approach, students’ learning satisfaction and online learning anxiety in the context of Saudi Arabian higher education institutions.

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\textbf{ABSTRACT}

This paper presents data from 417 undergraduate students on the relationship between the flipped classroom (FC) approach and students’ learning satisfaction (SAT), as well as the impact of online learning anxiety (OLA) in the context of Saudi Arabian higher education. A 5-Likert scale questionnaire with 74 items on students’ demographic information, flipped classroom approach, learning satisfaction, and online learning anxiety was used to collect the data. The dataset will be a valuable resource for policymakers, stakeholders, and academics seeking to better understand the most effective ways to implement the flipped classroom approach.

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\textit{Abbreviations:} FC, Flipped Classroom; OLA, Online Learning Anxiety.

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### Specifications Table

| Subject                      | Social Sciences                                      |
|------------------------------|------------------------------------------------------|
| Specific subject area        | Educational Technology                               |
| Type of data                 | Table                                                |
| How the data were acquired   | The data were acquired through an online survey. The questionnaire is available at [https://data.mendeley.com/datasets/5jdd74ggz8/6](https://data.mendeley.com/datasets/5jdd74ggz8/6) |
| Data format                  | Raw, Analyzed                                        |
| Description of data collection | The questionnaire was distributed to 417 undergraduate students at four Saudi universities using systematic sampling procedures. The universities that were chosen have the most enrolled students, represent the north, south, west, and east of Saudi Arabia, and have agreed to take part in the study. Their participation was completely voluntary, anonymous and did not include any information that could have revealed their identities to protect their privacy. Institutions: Jazan University (JU); University of Tabuk (UT); University of Jeddah (UJ); Imam Abdulrahman Bin Faisal University (IAU). Regions: North, South, West and East regions. Country: Saudi Arabia |
| Data source location         | Repository name: Mendeley Data                       |
|                              | Data identification number: 10.17632/5jdd74ggz8.2   |
|                              | Direct URL to data: [https://data.mendeley.com/datasets/5jdd74ggz8/6](https://data.mendeley.com/datasets/5jdd74ggz8/6) |

### Value of the Data

- The dataset provides a better understanding and insights into the relationships between the flipped classroom approach, students' learning satisfaction, and online learning anxiety in the context of Saudi higher education.
- The availability of this dataset as an open access dataset will provide policymakers, stakeholders, and academics with a better understanding of the role of online learning anxiety, allowing them to make more informed decisions about implementing the flipped classroom approach.
- The dataset can be used by educational researchers to compare it to data from similar studies conducted in other regions or universities.
- This dataset can also be used to conduct a new analysis comparing student satisfaction in the flipped classroom and traditional teaching methods.

### 1. Data Description

This dataset contains information gathered from an online questionnaire distributed to 417 undergraduate students at four Saudi universities spread across the Kingdom of Saudi Arabia. The dataset can be found at Mendeley Data [1].

The questionnaire consisted of 74 items on a five-point Likert scale (1 = Strongly Disagree, 2 = Disagree, 3 = Neither, 4 = Agree, 5 = Strongly Agree) and was divided into four sections. **Section 1** contains demographic information about participants (5 items), **Section 2** contains information about the Flipped Classroom (FC) approach (31 items), **Section 3** contains information about students' learning satisfaction (31 items), and **Section 4** contains information about students’ online learning anxiety (12 items). The variables, codes, definitions, and references of the adapted scales for **Sections 2 to 4** of the questionnaire are shown in [Table 1](#).

**Table 2** presents the demographic information of the participants (Section 1) based on five items: age, gender, institute, specialisation (i.e. academic major), and academic year. Out of the 417 participants, a total of 202 (48.4%) of the respondents were male, while the rest of the respondents 215 (51.6%) were female. In terms of the age of the respondents, 223 (53.5%) of them are between 21 to 23 years old. 108 (25.9%) of the total respondents were aged between 18 to 20 years, while 63 (15.1%) were aged between 24 to 26 years. Respondents over 26 years
old made up 5.5% of the total response. Hence, the majority of respondents were between 21 and 23 years old, and the minority of them were over 26 years old.

Further, Table 2 displays that the highest number of participants were from Jazan University (JU), followed by students from Imam Abdulrahman bin Faisal University (IAU), University of Tabuk (UT) and University of Jeddah (UJ).

The majority of the students are from the fields of Education Sciences (15.3%), and Science of Management, Business and Law (15.3%), followed by students from the Engineering and Engineering Industries (13.2%), Humanity and Social Sciences (12.2%), and Sciences respectively (12.0%). The lowest participation was students from the field of Sharia Sciences and Islamic Studies (9.4%).

In terms of the academic year, the majority of respondents were in their fourth year, followed by those in their third. Sixty students are in their first and second years, with the majority of respondents in their fifth year. All students completed 74 items from the three main constructs: the FC, the SAT, and the OLA.
Table 3
The constructs, codes, dimensions, and number of items of the questionnaire.

| Construct                      | Codes | Dimensions                      | Number of items |
|--------------------------------|-------|---------------------------------|-----------------|
| Flipped Classroom (FC)         | FKC   | Knowledge Construction          | 5               |
|                               | FIL   | In-Depth Learning               | 4               |
|                               | FAU   | Authenticity                     | 4               |
|                               | FMP   | Perspective                      | 3               |
|                               | FPK   | Prior Knowledge                  | 4               |
|                               | FTS   | Lecturer-Student Interaction     | 5               |
|                               | FSI   | Social Interaction               | 6               |
|                               | FCD   | Cooperative Dialogue             |                 |
| Satisfaction (SAT)            | SIT   | Interaction                      | 9               |
|                               | SIS   | Instruction                      | 12              |
|                               | SIO   | Instructor                       | 5               |
|                               | STG   | Technology                       | 5               |
| Online Learning Anxiety (OLA)  | OCA   | Computer Anxiety                 | 5               |
|                               | OCX   | Communication Anxiety            | 3               |
|                               | OOX   | Online Learning Anxiety          | 4               |

Table 4
Values of Skewness and Kurtosis of all dimensions.

| Variables                      | Dimensions | Skewness | Kurtosis |
|--------------------------------|------------|----------|----------|
| Flipped Classroom (FC)         | FKC        | -.381    | -.652    |
|                                | FIL        | -.641    | -.713    |
|                                | FAU        | -.639    | -.679    |
|                                | FMP        | -.457    | -.725    |
|                                | FPK        | -.769    | -.567    |
|                                | FTS        | -.608    | -.915    |
|                                | FSI        | -.503    | -.759    |
|                                | FCD        | -.596    | -.724    |
| Satisfaction (SAT)            | SIT        | -.452    | -.540    |
|                                | SIS        | -.381    | -.820    |
|                                | SIO        | -.391    | -.783    |
|                                | STG        | -.390    | -.845    |
| Online Learning Anxiety (OLA)  | OCA        | .286     | -.853    |
|                                | OCX        | .298     | -.755    |
|                                | OOX        | -.155    | -.141    |

Sections 2 to 4 of the questionnaire include data from all 74 items of each construct (FC, SAT, and OLA), which were further classified based on their dimensions, as shown in Table 3. Values of skewness and kurtosis of all dimensions are presented in Table 4. The complete questionnaire, which is available from the Mendeley dataset, contains more information on the items.

2. Experimental Design, Materials and Methods

The purpose of this research was to investigate the relationship between the flipped classroom (FC) approach and students’ learning satisfaction, as well as the role of online learning anxiety in this relationship, in the context of Saudi Arabia’s higher education institutions. This study included undergraduate students from four universities in four different regions of the Kingdom of Saudi Arabia. Eight hundred questionnaires were distributed to students online, but only 417 completed questionnaires were returned. The information gathered was coded and analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM).
Furthermore, data reliability was assessed using Cronbach’s alpha. Table 5 shows that the Cronbach alpha (\( \alpha \)) value of the dimensions in the three reflective variables ranges from .0829 to 0.941 (>0.7), while the Composite Reliability value ranges from 0.898 to 0.951 (>0.7), which are both acceptable and eligible for further analysis [5]. Furthermore, the AVE value of the dimensions in the three reflective variables range is greater than the acceptable value of 0.5 [5].

Table 6 revealed that some items were deleted because their outer loading values were less than 0.708. Outer loadings are the results of single regressions on each indicator variable’s corresponding construct [5]. It is also known as the indicator reliability and indicates the items’ commonality. It also refers to the extent to which the construct defines the variance in the items. Because of this deletion, the CR and AVE values can be kept within acceptable limits [5]. The following items were removed from the scale: SIT34, SIT36, SIT38, SIS43, SIS45, SIS48, SIS51, and SIO54.

These items were removed from the scale because of low loadings, where the value of each removed item was 0.687, 0.571, 0.469, 0.625, 0.501, 0.527, 0.610, and 0.608, respectively. In addition, Table 7 presents Fornell-Larcker’s criterion which is a second technique to measure the discriminant validity of the scale. This technique compares the square root of the AVE values with its relationship of the latent variables (other dimensions) [5].

Table 7 illustrates that the square root of the value of AVE of each dimension is not bigger than its highest relationship with other dimensions. These items were removed from the scale due to low loadings, with values of 0.687, 0.571, 0.469, 0.625, 0.501, 0.527, 0.610, and 0.608 respectively. Table 7 also includes Fornell-Larcker’s criterion, which is a second technique for determining the discriminant validity of the scale. This method compares the square root of the AVE values to their relationship with the latent variables (other dimensions) [5]. As shown in Table 7, the square root of each dimension’s AVE value is not greater than its highest relationship with other dimensions.

Table 5

| Variables | Dimensions | Cronbach alpha (\( \alpha \)) | Composite Reliability | Average Variance Extracted (AVE) |
|-----------|------------|-------------------------------|-----------------------|---------------------------------|
| FC        | FKC        | 0.910                         | 0.933                 | 0.736                           |
|           | FIL        | 0.898                         | 0.929                 | 0.767                           |
|           | FAU        | 0.885                         | 0.921                 | 0.743                           |
|           | FMP        | 0.852                         | 0.911                 | 0.774                           |
|           | FPK        | 0.883                         | 0.920                 | 0.741                           |
|           | FTS        | 0.904                         | 0.929                 | 0.724                           |
|           | FSI        | 0.882                         | 0.927                 | 0.809                           |
|           | FCD        | 0.890                         | 0.931                 | 0.819                           |
| SAT       | SIT        | 0.906                         | 0.928                 | 0.682                           |
|           | SIS        | 0.941                         | 0.951                 | 0.710                           |
|           | SIO        | 0.917                         | 0.942                 | 0.801                           |
|           | STG        | 0.891                         | 0.919                 | 0.696                           |
| OLA       | OCA        | 0.907                         | 0.931                 | 0.730                           |
|           | OCX        | 0.829                         | 0.898                 | 0.747                           |
|           | OOX        | 0.882                         | 0.919                 | 0.740                           |
Table 6
Results of the outer loadings, for all variables.

| Variable | Dimensions | Items | Loading (>0.7) | Variable | Dimensions | Items | Loading (>0.7) |
|----------|------------|-------|----------------|----------|------------|-------|----------------|
| FC       | FKC        | FKC1  | 0.870          | SIT39    | 0.837      |
|          |            | FKC2  | 0.887          | SIT40    | 0.781      |
|          |            | FKC3  | 0.915          | SIS41    | 0.813      |
|          |            | FKC4  | 0.815          | SIS42    | 0.816      |
|          |            | FKC5  | 0.800          | SIS43    | 0.625      |
| FIL      | FIL6       | 0.881 |                | SIS44    | 0.844      |
|          | FIL7       | 0.901 |                | SIS45    | 0.501      |
|          | FIL8       | 0.912 |                | SIS46    | 0.845      |
|          | FIL9       | 0.805 |                | SIS47    | 0.845      |
| FAU      | FAU10      | 0.864 |                | SIS48    | 0.527      |
|          | FAU11      | 0.883 |                | SIS49    | 0.820      |
|          | FAU12      | 0.873 |                | SIS50    | 0.866      |
|          | FAU13      | 0.827 |                | SIS51    | 0.610      |
| FMP      | FMP14      | 0.908 |                | SIS52    | 0.806      |
|          | FMP15      | 0.920 |                | SIS53    | 0.853      |
|          | FMP16      | 0.866 |                | SIS54    | 0.608      |
| FPK      | FPK17      | 0.801 |                | SIO55    | 0.910      |
|          | FPK18      | 0.816 |                | SIO56    | 0.891      |
|          | FPK19      | 0.917 |                | SIO57    | 0.886      |
|          | FPK20      | 0.904 |                | STG58    | 0.870      |
| FTS      | FTS21      | 0.866 |                | STG59    | 0.901      |
|          | FTS22      | 0.887 |                | STG60    | 0.833      |
|          | FTS23      | 0.814 |                | STG61    | 0.785      |
|          | FTS24      | 0.876 |                | STG62    | 0.776      |
|          | FTS25      | 0.808 |                | OCA63    | 0.811      |
| FSI      | FSI26      | 0.878 |                | OCA64    | 0.866      |
|          | FSI27      | 0.904 |                | OCA65    | 0.887      |
|          | FSI28      | 0.916 |                | OCA66    | 0.873      |
| FCD      | FCD29      | 0.890 |                | OCA67    | 0.831      |
|          | FCD30      | 0.921 |                | OCX68    | 0.897      |
|          | FCD31      | 0.905 |                | OCX69    | 0.809      |
| SAT      | SIT32      | 0.810 |                | OCX70    | 0.884      |
|          | SIT33      | 0.857 |                | OX71     | 0.790      |
|          | SIT34      | 0.687 |                | OX72     | 0.899      |
|          | SIT35      | 0.824 |                | OX73     | 0.900      |
|          | SIT36      | 0.571 |                | OX74     | 0.846      |
|          | SIT37      | 0.760 |                |          |            |
|          | SIT38      | 0.469 |                |          |            |

Table 7
The square root of the average variance extracted.

| FKC | FIL | FAU | FMP | FPK | FTS | FSI | FCD | SIT | SIS | SIO | STG | OCA | OCX | OOX |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| FC  | 0.858 | 0.748 | 0.876 | 0.862 | 0.880 | 0.861 | 0.851 | 0.899 | 0.905 | 0.744 | 0.754 | 0.837 | 0.834 | 0.860 |
| SAT | 0.650 | 0.677 | 0.650 | 0.681 | 0.731 | 0.726 | 0.664 | 0.668 | 0.797 | 0.433 | 0.521 | 0.864 | 0.566 | 0.162 |

OLA | 0.139 | 0.177 | 0.122 | 0.150 | 0.183 | 0.215 | 0.183 | 0.137 | 0.162 | 0.127 | 0.095 | 0.162 | 0.854 | 0.864 |
OCX | 0.042 | 0.086 | 0.056 | 0.093 | 0.090 | 0.072 | 0.050 | 0.019 | 0.043 | 0.016 | 0.015 | 0.566 | 0.864 |
OOX | 0.172 | 0.141 | 0.123 | 0.144 | 0.150 | 0.132 | 0.140 | 0.162 | 0.200 | 0.230 | 0.246 | 0.269 | 0.433 | 0.521
Ethics Statement

Prior to data collection, participants had been informed that their participation in this non-experimental research was entirely voluntary and that they could leave at any time and for any reason, with no penalty or loss of benefits to which they were entitled, if any. They were also informed that there were no known risks associated with participating in the research. Furthermore, the content of their survey will be kept private, and the data collected will not contain any information that could be used to identify the students. All participants have voluntarily consented to participate.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability

The Moderating Role of OLA on The Relationship Between FC and SAT (Original data) (Mendeley Data).

CRediT Author Statement

Turki Mesfer Alqahtani: Data curation, Writing – original draft; Farrah Dina Yusop: Writing – review & editing, Conceptualization, Methodology, Supervision, Funding acquisition; Siti Hajar Halili: Supervision.

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Supplementary Materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.dib.2022.108588.

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