

## The Impact of Blended Instruction on Secondary School Students' Academic Growth and Critical Thinking

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### Abstract

The purpose of this study is to determine whether or not ninth-grade students in the Hyderabad benefit from blended learning in terms of academic performance and the cultivation of reflective thinking in the context of school education. Two classes of ninth-graders from the Narayana Private School in Hyderabad city make up the study sample. Twenty-five students were taught utilising a blended learning technique, while the remaining twenty-three served as a control group receiving instruction in the conventional fashion. The study used two instruments, an accomplishment exam and a reflective thinking scale, both of which their validity and reliability had established in order to accomplish the study's goals. The experimental group showed considerable improvement over the control group on the post-test measures of performance. The results also demonstrated that the experimental group had a significantly higher mean score than the control group on the reflective thinking scale. According to the findings, a more comprehensive approach to education, such as integrated learning, is more successful in transmitting knowledge.

**Keyword:** reflective thinking, significantly, instruments, blended learning.

### Introduction

The world is currently experiencing a major scientific and technological revolution, which has led to a plethora of innovations and incremental shifts in the technological landscape, all of which have impacted the development of pedagogical strategies and contributed to the expansion of human knowledge. New approaches to Islamic education are needed to keep up with modern difficulties, such as encouraging critical thinking and research skills development and transforming the student into an enthusiastic, curious, and involved learner rather than a passive observer.

The state government has been eager to revise its curricula in line with quality educational standards and outcomes and to provide schools with state-of-the-art technologies and educational resources in light of the future vision of the Telagana, which aims to develop and enhance the educational system in an interactive environment. Teachers are allowed greater latitude to incorporate these resources into their classes and modify them to meet the requirements of their students. This has the dual benefit of broadening students' exposure to new ideas and subjects and honing their capacity for critical thinking and problem solving.

In the late 1990s, blended learning quickly rose to prominence as one of the most widely used forms of digital learning. The interconnected nature of its parts has led some educators to see it as a replacement for more conventional forms of online education (Al-Hashimi, Soman, Al-Khatib, Fakhry, and Al-Muwajdah, 386: 2010). Notwithstanding their differences in definition, Graham (2004) and Milheim (2006) agree that blended learning uses the strengths of both conventional classroom instruction and online learning to get optimal results.

By strengthening the connections between the learners and the available learning programmes and developing their skills and abilities, blended learning is crucial in fostering interaction and motivation

towards studying the subject of Islamic education. According to Makhdoom et al. (2013), blending traditional classroom instruction with online learning creates a dynamic and mutually beneficial setting for teachers and students alike. The flexibility of blended learning allows students to study whenever they choose outside of class, so they may go back and review material from different lectures at different times of day (Eryilmaz, 2015). (Eryilmaz, 2015). Because of this, students have more leeway in determining when and where they study, and they may go through the material at their own speed, based on their own strengths and weaknesses (Voci & Young, 2001). According to (Voci & Young, 2001). As we must maintain and improve upon the current educational system in order to take advantage of the technological developments of the present, blended learning is one of the most effective uses of modern technology in education (Medina, 2018; Spring & Graham, 2017).

In addition, introspective contemplation is a highly developed mental process. The ability to focus one's thoughts on a specific goal requires an examination of the many components of a given situation and a search for underlying links; developing this ability is crucial in assisting children to solve problems in a logical, rather than irrational, manner. (Afifi, 2018).

Since it affords students enough time for critical and introspective thought, an Islamic education in the United Arab Emirates is essential for the holistic development of the student's character. This is evident in verses throughout the Qur'an and Hadith, as well as in the countless actions and occurrences that prompt one to consider the vastness of the universe and its vocabulary. Due to its importance, several studies have focused on analysing reflective thinking and searching for effective strategies and techniques for its development. Recent studies by (Arar, 2019), (Alfara, 2021), (Yim, Ching & Long, 2017), (Hsieh and Chen, 2012), (Alabdullat and Wishah, 2019), and others confirm the importance of teaching and mastering its skills across a variety of educational techniques (Lim & Angelique, 2011).

The use of blended learning is also supported by a substantial amount of research from a variety of academic disciplines. Several studies, including those by (Utami, 2018), (al-Massad, 2017), (Basiran, 2017), (Al- Saqaria, 2018), (Kintu & Zhu, 2016), and (Abdulrahman, Siddiq, and Ahmad, 2019), have found that using environments supported by technological developments in curricula improves students' learning and the teacher's role. Technology's integration into the classroom has had far-reaching effects on students' academic performance and their development of reflective thinking skills. This study expands upon prior research by examining a sample of ninth graders in the United Arab Emirates to determine the impact that adopting blended learning has on students' achievement and the development of reflective thinking within the framework of Islamic education.

### **Problem of the Study:**

As a result of advancements in information and communication technology, the educational system has evolved into one in which students and teachers work together to solve problems and learn from one another, and new teaching techniques based on the use of technical resources and a variety of effective media have emerged.

A pleasant learning environment that makes use of educational technology and programmes that are effectively fitted to the curriculum may do wonders for skill development, experience accumulation, knowledge depth, and the attainment of sustainability in lifelong education (Ministry of Education, 2017).

Experts in the field of education recognised the need of using blended learning and online education strategies while teaching Islamic studies to pupils in light of the present circumstances brought on by the Coronavirus (COVID-19).

There were a variety of factors that prompted researchers in Al Ain, United Arab Emirates, to look at how blended learning affected the achievement and progress of ninth graders and their capacity for reflective thinking within the framework of Islamic education. Due to a number of factors, including researchers' desire to keep up with educational developments, experts' and specialists' emphasis on the importance of teaching reflective thinking and employing modern technology and strategies for its development, the positive effect of these factors in overcoming the problems and methods of traditional education, and a lack of studies addressing these issues, there has been relatively little research conducted on this topic.

## Hypotheses of the Study:

The research aimed to verify two hypotheses:

1. In the ninth grade in the United Arab Emirates, there is no statistically significant difference in Islamic education performance by teaching style at the 0.05 level (blended learning, the usual method).
2. No significant differences at the 0.05 level can be found between the use of traditional and non-traditional approaches to educating ninth-grade students in the United Arab Emirates to think critically about Islamic education (blended learning, the usual method)

## Objectives of the Study:

The participants were ninth-graders studying Islamic education, and the goals were to determine whether or not employing blended learning increased student success and fostered reflective thinking.

## The Importance of the Study:

Specifically, there are two key reasons why this study is important:

### First: scientific significance:

The value of the study lies in the fact that it contributes to the enlargement of the educational literature and library on the issue, since the researchers are unaware of many studies that have dealt with the effect of blended learning on accomplishment and the development of reflective thinking. This study paves the way for similar future studies to be undertaken at other educational levels and with other variables.

### Second: relevance to daily life:

These findings may be useful to those tasked with developing Islamic education curricula by offering strategies for incorporating blended learning strategies and methods into the planning of educational activities and settings. Instructors in the area of Islamic education might benefit from this study by incorporating its methodologies, results, and aspects into their own teaching and therefore better supporting their students' intellectual development and ability for introspection.

## The Definitions of the Study's Terms and Procedures:

Below are the study's most essential concepts and their respective operational definitions:

**Blended learning:** The term "blended learning" refers to a specific technique of providing curriculum that mixes both online and face-to-face training (Cheung & Hew, 2011). By definition, it is a curriculum for teaching ninth graders about Islam that combines in-class instruction with online resources including videos and discussion forums.

**Academic achievement:** From a pedagogical perspective, this term denotes the extent to which a ninth grader has grasped the concepts introduced in Unit 2 of their Islamic education textbook. Students are graded on the basis of their scores on a specialised achievement test.

**Reflective thinking:** The procedural knowledge of ninth graders is defined as their ability to interact with academic environments by means of the mental procedures used to solve problems and make sound, well-reasoned judgements. To do this, we have developed a reflective thinking scale specific to Islamic education, and student performance on this scale will serve as our primary metric.

## Limits of the Study:

The limitations of the research are as follows.

- Spatial limits: ninth graders from Narayana Private Academy in Al Ain City, United Arab Emirates, participated in the research.
- Temporallimits: The 2019–2020 academic year will begin with the fall semester, which will be in 2019.

- Objective limits: Both an intelligence test and a scale for gauging introspective thinking were used in the research.
- Human limits: Forty-eight ninth graders will be randomly assigned to either an experimental group or a control group to receive Islamic instruction during the first semester of 2019-2020.

### **Research Methodology:**

Due to the specifics of the research at hand, a semi-experimental approach was used, with two parallel groups serving as the studies experimental and control conditions, respectively. The following diagram depicts the conceptual framework of this investigation:

EG: O1 O2X O1 O2CG:O1 O2 O1 O2

EG and CG represent the treatment and control groups, respectively; O1 represents the objective achievement scale, O2 represents the reflective thinking scale, and X represents the therapy.

### **Human Research Volunteers and Other Study Participants:**

ninth graders in public and private schools in the United Arab Emirates associated with the Al Ain Educational Office in the first semester of the 2019 school year made up the study population, according to data from the Ministry of Education for pupils registered in the city of Al Ain (2019-2020).

Forty-eight ninth-graders from the Narayana Private Academy School in Al Ain, United Arab Emirates, which is associated with the Ministry of Education, took part (Al Ain Education Office). Participants were carefully selected to provide optimal research circumstances. The school's sixty ninth graders were randomly divided into two groups: the experimental group, comprised of twenty-five students, who were taught utilising blended learning, and the control group, comprised of twenty-three kids, who were taught in the conventional method.

### **These Two Research Instruments:**

The research relied on two methods to accomplish its goals:

#### **First: the achievement test**

Twenty-five paragraphs were provided on the test for the anticipated achievement, and each paragraph had four alternative responses, only one of which was correct. Researchers created the sample paragraphs for the exams by considering the contents of the study unit and requirements table, as well as grammatical clarity, correctness, and a class time limit of (45) minutes.

#### **Accuracy of the Achievement Test**

Arbitrators were given the accomplishment exam and tasked with deciding whether or not it was legitimate. The test's relevance in terms of validity, linguistic formulation, and accuracy of expressions, as well as the test's applicability to the levels of the instructional goals, were examined, and any criteria or indicators that were thought unnecessary were either amended, removed, or added.

#### **Whether or not the Achievement Test Can Be Trusted**

The reliability coefficient was calculated using the internal consistency method using Utilizing Richardson's equation 20-, leading to a result of (0.86). These values are acceptable for the purposes of this study.

#### **Second: Analyzing Your Level of Reflection**

After conducting a literature analysis on reflective thinking and providing direction for further research and studies, a reflective thinking scale was created based on the five reflective thinking abilities (visual skill, skill in detecting fallacies, skill in reaching conclusions, skill in giving convincing explanations, and skill in developing suggested solutions). The degree to which ninth-

graders have developed the capacity for introspective thought was assessed via four paragraphs devoted to each of the aforementioned talents.

**Measurement of reflective thinking: reliability and validity**

The impartial review of the reflective thinking scale confirmed the validity of the paragraphs to be measured, their appropriateness for ninth graders' skill levels, the linguistic formulation and correctness of expressions, as well as the flexibility to adjust, delete, or add any standards or indicators as necessary.

**Validity of a Measure of Reflective Thinking**

We used the internal consistency method and the Coder Richardson equation 20- to calculate the reliability coefficient of the scale, and the result was (0.87). These values are acceptable for the purposes of this study.

**How to do the experiment for the study**

We first did a comprehensive review of the related theoretical literature and studies to ensure the two research approaches were legitimate and reliable. Narayana Academy School in Al Ain was chosen as the research location, and ninth-graders were selected as the research population. In this study, students were randomly assigned to either an "experimental" or "control" group. Al Ain University and the Directorate of Education and Knowledge sent the two researchers separate notes to aid them in their investigation. The material was then subjected to the study methods. After that, statistical analysis was carried out on the data using the (SPSS) programme, and the results were compiled and presented.

**Discussion and Analysis of the Study's Findings**

**First:** according to the data, the first hypothesis, "There are no statistically significant differences at the significance level ( $\alpha \leq 0.05$ ) in the achievement of ninth-grade students in the subject of Islamic education in the United Arab Emirates due to the teaching method (blended learning, the usual method)," is false.

ninth graders were randomly split into two groups (experimental and control) and their average and standard deviation results on an achievement test were compared before and after they were exposed to Islamic education in order to test the hypothesis (Table 1).

Table (1): Average and standard scores on a pre- and post-test in Islamic education for pupils in the ninth grade, broken down by demographic category (experimental, control)

		Pre-Assessment		Post-Assessment	
Group	Count	Arithmetic Mean	Standard Deviation	Arithmetic Mean	Standard Deviation
Experimental	25	11	4.193	18.40	4.481
Control	23	10.22	3.692	12.00	4.824
Total	48	10.63	3.939	15.33	5.620

Pre- and post-test scores on an accomplishment exam related to Islamic education show strong group disparities, as shown in Table (1). (Test, regulate). To assess the statistical significance of the differences between the experimental and control groups on the achievement test, we first used one-way analysis of variance (one-way ANCOVA) to remove the influence of the pretest on the posttest scores. The data is presented in Tabular form below (2).

ninth graders' post-test performance independent of their pre-test performance, as determined by the results of a one-way analysis of covariance (ANCOVA) (experimental, control).

Source of variance	sum of squares	Degrees of freedom	Mean sumofsquares	F value	Level of Significance	ETA Squared $\eta^2$
Pre-measurement	397.965	1	397.965	30.046	.000	.400
Group	401.534	1	401.534	30.315	.000	.403
Error	596.035	45	13.245			
Total	1484.667	47				

Grades on the accomplishment exam for the topic of Islamic education vary significantly ( $\alpha \leq 0.05$ ) across the groups of ninth graders, as shown in Table 2. (Experimental, control). The group effect is statistically significant, with an F value of 30.315,  $p=0.000$ . Based on the value of ETA square ( $\eta^2$ ) interpreted (predicted), Table (2) shows that the teaching approach significantly impacted the dependant variable, the accomplishment test.

This might be due to the impact of peers when doing classroom and home chores, to the greater interaction between students, educational content, and learning tools, and between students and the teacher, or to a combination of these factors. All of these elements work together to make learning more interesting and enjoyable for students, which in turn improves academic outcomes.

You can see which group gained the most from the adjustments by comparing their corrected arithmetic means and standard errors, which have been extracted and shown in Table 1. (3).

Table (3): Means and standard deviations on the achievement test after adjusting for group size (experimental, control)

Group	A weighted average with post-hoc adjustments	Standard error
Experimental	18.122	.730
Control	12.303	.761

Table 3 shows that the integrated learning group significantly outperformed the control group across the board. The null hypothesis is thus incorrect, and the alternative hypothesis, which asserts that "there are statistically significant differences at the level ( $\alpha \leq 0.05$ ) in the average grades of the students in the control and experimental groups on the post-achievement exam," is true.

To put it simply, the qualities of this kind of education make it possible to learn in a variety of situations and in ways that are engaging and enjoyable, which in turn enhances the efficiency with which information is delivered, absorbed, and internalised. As a result, this method of instruction is different from the norm, especially in the context of Islamic education. It has led to higher levels of interest in learning, a broader scope of information acquired, a firmer understanding of key ideas, and longer-lasting memorization.

Research by (Utami, 2018), (al-Massad, 2017), (Saqaria, 2018), and (Kintu & Zhu, 2016) all support the idea that blended learning is effective in terms of student achievement and the development of positive attitudes, therefore these results make sense.

**Second:** The data support the second hypothesis, which states, "There are no statistically significant differences in the development of reflective thinking among ninth-grade students in the subject of Islamic education in the United Arab Emirates due to the teaching method (blended learning, the usual method) at the level of significance ( $\alpha \leq 0.05$ )."

In order to evaluate the hypothesis, the means and standard deviations of ninth graders' reflective thinking scale scores on the issue of Islamic education by group (experimental, control) are shown in Table (4) below.

Table (4): Calculating the mean and standard deviation of ninth graders' pre and post-test scores on a reflective thinking scale related to Islamic education (experimental, control)

Group	Number	Pre-Measurement		Post-Measurement	
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation
Experimental	25	10.40	2.828	15.16	1.841
Control	23	9.00	2.576	9.78	1.930
Total	48	9.73	2.773	12.58	3.293

Mean scores on the reflective thinking scale varied significantly between the pre- and post-tests for each subgroup of ninth graders, as shown in Table 4. (Experimental, control). In order to assess whether or not the differences between the experimental and control groups on the reflective thinking scale were statistically significant, we used one-way analysis of covariance (one-way ANCOVA) after correcting for changes in pre- and post-test scores. Table 5 below displays these findings:

Table(5): Summary of a one-way analysis of covariance (ANCOVA) of reflective thinking scale post-test scores by group (experimental, control) for students in ninth grade who are learning about Islam.

Source of variance	Sum of squares	Degrees of freedom	Mean sum of squares	F value	Level of significance	ETA squared $\eta^2$
Pre-measurement	43.603	1	43.603	16.396	.000	.267
Group	266.152	1	266.152	100.082	.000	.690
Error	119.670	45	2.659			
Total	509.667	47				

When comparing groups of ninth graders on the reflective thinking scale related to Islamic education, Table 5 shows that there are significant differences at the  $\alpha \leq 0.05$  level. (Test, regulate). Since the F value is 0.000, indicating a statistically significant group effect (16.396).

For the dependent variable, a measure of reflective thinking, the interpreted (predicted) variance was 69% of the ETA squared ( $\eta^2$ ) value (Table 5).

You can see which group gained the most from the adjustments by comparing their corrected arithmetic means and standard errors, which have been extracted and shown in Table 1. (6).

Table (6): Group means and standard deviations for mathematical modifications made to the reflective thinking scale (experimental, control)

Group	Modified postarithmetic mean	Standard error
Experimental	14.919	.332
Control	10.045	.346

Students in the experimental group who used the integrated learning method did better than those in the control group, as seen in Table 6.

These positive outcomes are probably attributable to the use of blended learning, which involves a variety of activities and applications conducted throughout the lesson stages to increase motivation to learn, engage students in an integrated and interactive educational process, activate their previous knowledge, and render it a starting point. All these factors combined to increase pupils' attention, enjoyment, and suspense while also strengthening their ability to reflect.

Studies by (Hsieh and Chen, 2012), (Yim, Ching, & Long, 2017), (Arar, 2019), (Lim, & Angelique, 2012), and (Abu Shreikh, 2017) all come to similar conclusions, demonstrating the importance of educating students to think critically and reflectively.

## Recommendations

- Blended learning should be incorporated into all aspects of Islamic education as well as other academic subjects, and the teacher's guide should feature blended learning pedagogical models.
- The significance of including time for critical reflection in a variety of settings all through the curriculum design and creation process.
- The value of introducing students to technology and getting them ready to utilise it in the classroom, especially in the context of Islamic education but also in other fields.
- Making sure teachers in all types of Islamic schools are aware of and able to take use of blended learning's numerous strengths.

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