

The Effect of Flipped Observational Learning on Learning the High Jump

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Abstract

This research aims to study the effect of the flipped learning method, based on observation, on learning high jump skills compared to traditional methods. This strategy is implemented by providing students with visual educational content outside of class time, including videos explaining the various stages of the high jump, such as approach, takeoff, flight, and landing. In contrast, practical class time is allocated to practical exercises, helping student's correct errors and improve performance more effectively. The experimental approach was used in this research, where a sample of Al-Furqan Intermediate School students for boys was divided into two groups: the experimental group, which learned using flipped learning by observation, and the control group, which learned using the traditional method. The results showed a clear improvement in the experimental group's performance in all stages of the high jump compared to the control group, confirming the effectiveness of flipped learning in teaching complex motor skills. It was also shown that this strategy promotes self-learning and increases students' motivation for continuous improvement.

Keywords: *flipped learning by observation, high jump*

Introduction

Flipped learning is a modern educational method that emerged in response to rapid technological developments in the field of education. It reverses the traditional roles of education by providing lesson content to students through various media outside the classroom, such as educational videos or interactive presentations, while using class time for practical activities, discussions, and exercises (Bergmann & Sams, 2012). This educational approach enhances learner independence and gives them the opportunity to control the pace of learning and the frequency of viewing, which helps consolidate concepts more deeply. Numerous studies have confirmed that flipped learning contributes to the development of the educational process through understanding, comprehension, and thinking, in addition to enhancing the mental abilities and cognitive competencies of students at various academic levels and various sciences (Muhammadin, and Abdullah, 2018).

In the field of physical education and sports, flipped learning strategies have gained increasing importance due to the active learning environment they provide, allowing students to practice motor skills more effectively. Some researchers have indicated that employing modeling or observation learning enhances motor learning, as it helps the learner form an accurate mental image of the required motor performance, and then simulate and implement it correctly (Bandura, 1997; Schmidt & Lee, 2019).

The high jump is a complex athletics event, requiring the integration of physical abilities (strength, speed, flexibility) and technical skills (approach steps, takeoff, flight, or crossing the bar). There are several methods for crossing the bar, as mentioned by (Al-Rabdi, 2005),

including the cane jump, western jump, saddle jump, and foosball jump. The foosball method was used in this research. Beginners often face difficulties in coordinating movements and mastering the stages of the performance, which calls for the use of modern educational strategies that enhance the speed of learning and the quality of performance (Hamid, 2020). Hence, the importance of employing flipped observational learning as a tool to assist physical education students in learning this activity. It allows them to review correct performance models via video multiple times outside of training time, then use the practical session for practical application and direct correction.

Integrating flipped observational learning into the learning of the high jump may contribute to improving learners' motivation, shortening learning time, and increasing technical accuracy. Therefore, this study seeks to explore the impact of this method on learning the high jump among middle school students and highlight its effectiveness compared to traditional teaching methods.

Research Problem

Researchers and practitioners in the field of physical education note that many students face difficulties in learning the technical skills of the high jump, especially in the various stages of performance (approach, takeoff, flight, and landing). Traditional teaching methods often focus on direct explanation and practical application, which may not allow the learner enough time to repeat the observation or correct errors.

From here, the research problem stems from the question:

What is the effect of using the flipped observational learning strategy on learning the high jump compared to the traditional method?

Research Objectives

- To identify the effect of flipped observational learning on students' learning of the stages of the high jump.
- To compare the results of students who learned using the flipped observational learning method with their peers who learned using the traditional method.

Research Hypotheses

- There are statistically significant differences between the pre- and post-measurements of the experimental group in learning the high jump, with a difference in favor of the post-measurement.
- There are statistically significant differences between the two groups (experimental and control) in the post-test, in favor of the experimental group that used flipped observational learning.

Research fields:

- Human field: A sample of middle school students (first middle school/Al-Furqan Middle School for Boys).
- Time field: (28/2/2024) to (23/4/2024)
- Spatial field: The outdoor playground of Al-Furqan Middle School for Boys.

Research methodology and field procedures:

Research Methodology:

The experimental approach was used in this research to determine the effect of using flipped observational learning on high jump performance compared to the traditional method. The experimental approach relies on comparing the results of the experimental group (which used

flipped observational learning) with the results of the control group (which learned using the traditional method).

Community and sample research:

The research population consisted of 400 students from Al-Furqan Intermediate School for Boys. This population included students aged 13 to 15, with first-year intermediate students selected to form the research sample.

The sample was randomly selected from among Al-Furqan Intermediate School for Boys students, ensuring accurate representation of the research population. These students were selected based on criteria related to their level of motor activity and ability to participate in sports activities. It was also confirmed that there were no factors affecting their ability to interact with different educational methods.

The research sample consisted of 160 first-year middle school students, divided into four sections (A, B, C, and D), each consisting of 40 students. Sections (A) and (C) were selected by lottery.

The experimental group sample consisted of 27 students, who were randomly selected, as was the control group. The sample was divided into two groups as follows:

1. The experimental group: This group included 27 students, who were subjected to flipped observational learning.
2. The control group: This group included 27 students, who were trained using the traditional method to learn the high jump.

To ensure sample homogeneity, the researcher extracted the arithmetic mean, median, standard deviation, and skewness coefficient for the research sample for age, height, and weight. The results showed the homogeneity of the sample, as it was limited to (± 3), as shown in Table No. (1).

Table (1) show the homogeneity of the research sample members.

Variables	Mean	Median	Std. Deviations	Skewness
Age	13.383	13.150	0.445	0.653
Height	148.14	148.00	0.483	0.376
Mass	41.935	42.000	0.707	0.155

A pre-test was then conducted to verify sample equivalence between the two groups for the research variables, comparing the performance of the experimental group and the control group in four stages of training (approach, takeoff, flight, and landing). Means and standard deviations were calculated for each group, and a t-test was used to verify the statistical significance of the difference between the two groups, as shown in Table (2).

Table (2) shows the sample equivalence between the two groups for the research variables.

Test	Groups	Mean	Std. Deviations	Sig	Type Sig
Approach	Experimental	8.2519	.22933	.257	Non sig
	Control	8.3444	.35119		
Takeoff	Experimental	8.1519	.37965	.793	Non sig
	Control	8.1222	.44405		
Flight	Experimental	7.4444	.50637	.580	Non sig
	Control	7.5185	.46989		
Landing	Experimental	7.4889	.47177	.909	Non sig
	Control	7.4741	.48086		

Not significant at 52 degrees of freedom and a significance level of 0.05.

The pre-test results showed no statistically significant differences between the experimental and control groups in all phases (approach, takeoff, flight, and landing). All statistical values (sig) were greater than 0.05, indicating that performance in the various phases was similar between the two groups before the experiment.

Equipment and Tools Used:

- 1- Video Cameras: High-quality video cameras were used to record instructional videos demonstrating the correct motor patterns for the high jump. They were also used to document students' performance during practical sessions to evaluate motor performance and analyze errors.
- 2- Laptop or Tablet: A laptop or tablet was used to display instructional videos for students in the experimental group, in a flexible learning environment outside of class time. It was also used to display presentations and interact with students during class.
- 3- Motor Performance Measurement Devices: Measuring devices such as speed measurement devices and force measurement devices were used to assess students' physical performance while learning the high jump, such as measuring take-off force and approach speed.
- 4- Stopwatch: A precise stopwatch was used to measure the time required for each phase of the motor performance for the high jump, such as measuring the time taken for approach, take-off, and crossing the bar.
- 5- Educational and sports training equipment: The basic sports equipment for teaching high jump was used after it was provided by the researcher, i.e. the complete device for high jump effectiveness was provided, such as:
 - Bar: To teach students to cross the bar correctly.
 - Ruler or Measure: To measure the high distances achieved by students in jumping.
 - Training Hurdles: To teach students the correct timing for their approach steps.
 - Bearers: To support the bar on both sides.
 - Mat: A large foam mat for students to land on.
 - Cones: Indicators that guide the body's trajectory.
- 6- Arabic and foreign sources.
- 7- Technical performance evaluation form for the high jump event.
- 8- Dell calculator.

These tools and devices were used to provide an integrated learning environment that combines flipped learning through observation and practical training, contributing to improving students' technical performance.

Technical Performance Evaluation Form for the High Jump Event:

The researcher prepared a technical performance evaluation form for the high jump event based on the complete movement sequence (Peter Thompson, 2009). He obtained the opinions of experts specializing in the form and distributed scores for each stage of the technical performance, as shown in Appendix (1) and Appendix (2).

Exploratory Experiment:

"It is a small experiment or mini-work for a general study conducted by the researcher with the aim of identifying the negatives and positives associated with conducting the main experiment of the research" (Al-Shouk & Al-Kubaisi, 2004). A pilot experiment was conducted on Wednesday, February 28, 2024, with the aim of testing the effectiveness of the tools and methodologies used in the research, ensuring the integrity of the procedures, and assessing the suitability of the tools used in collecting data and analyzing the results before beginning the main experiment. This experiment also provided an opportunity to ensure the accuracy of the equipment and to achieve the best possible use of the various educational methods.

A small sample of students (approximately 10-15 students) was selected to represent the research community. This sample underwent the same procedures that will be used in the main research to determine the appropriateness of the methods and tools.

The instructional videos on high jump training were tested, evaluating the quality of the image and sound, and the clarity of the movement explanation. It was also ensured that students could comfortably access and view the videos using electronic devices (laptops or tablets).

Practical learning modules similar to the main modules were conducted, where students practiced the various performance phases (approach, takeoff, flight, and landing) using the tools and methods that will be used in the main research, such as cameras and a timer.

Pre-test:

The researcher conducted the pretests in the outdoor playground of Al-Furqan Intermediate School for Boys on Thursday, February 29, 2024.

Main Experiment:

The main experiment was conducted from March 3, 2024 to April 22, 2024. Instructional exercises were used using the flipped observational learning method. The number of instructional units was 16, with two instructional units, and they were conducted over a period of eight weeks. The overall goal was to improve students' skills in learning the high jump using the flipped observational learning method. The program covered all the basic stages of the high jump (approach, takeoff, flight, and landing), while integrating the basic motor skills and techniques for each stage. The instructional units are as follows:

Unit 1: Introduction to the High Jump

Objective: To introduce students to the high jump as a sporting competition and its importance in athletics.

Activities:

1. Watch an introductory video: An introduction to the high jump and its various stages.
2. Homework: Watch a video on the history of the high jump and basic techniques.
3. Classroom exercise: Discuss common challenges in the high jump and share opinions.

Unit 2: Approach Foundations and Techniques

Objective: To teach students how to perform an approach effectively.

Activities:

1. Watch a technical video: Proper approach techniques, focusing on the final steps before jumping.

2. Homework: Watch a video demonstrating common approach errors and how to correct them.
3. In-class practice: Have students perform practical exercises to improve their approach steps.
4. Assessment: Analyze students' performance using the video.

Unit 3: Stepping Techniques (Jumping)

Objective: To teach students how to perform a stepping motion powerfully and effectively.

Activities:

1. Watch an instructional video: Demonstrate correct stepping techniques and how to use power correctly.
2. Homework: Watch a video on how to step up using proper technique.
3. In-class practice: Perform exercises to enhance stepping power and improve coordination.
4. Assessment: Evaluate students' jumping performance using video cameras.

Unit 4: Crossing the Bar

Objective: To teach students how to cross the bar with maximum accuracy.

Activities:

1. Watch an instructional video: Demonstrate how to raise the knees correctly while crossing the bar.
2. Homework: Watch a video demonstrating errors in crossing the bar and how to correct them.
3. In-class practice: Perform exercises to develop skill in crossing the bar.
4. Assessment: Analyze students' performance using video and compare errors.

Unit 5: Safe Landing

Objective: To teach students how to land safely and effectively.

Activities:

1. Watch an instructional video explaining proper landing techniques and how to absorb shock.
2. Homework: Watch a video on proper landing exercises.
3. Classroom practice: To train students on landing techniques using special equipment.

Unit 6: Phase Combination (Approach and Takeoff)

Objective: To combine approach and takeoff techniques and improve coordination between them.

Activities:

1. Watch an instructional video: To combine the steps of approach and takeoff into a single movement.
2. Homework: Watch a video demonstrating the combination of approach and takeoff.
3. Classroom practice: To practice exercises to improve coordination between approach and takeoff.
4. Assessment: To analyze students' performance using video cameras.

Unit 7: Phase Combination (Ascension and Takeoff)

Objective: To combine takeoff techniques with smooth crossing of the bar.

Activities:

1. Watch an instructional video: To combine takeoff and takeoff into a single movement.
2. Homework: Watch a video demonstrating the integration of takeoff and crossing the bar.
3. Classroom Practice: Perform practical exercises for the jumping phases.

Unit 8: Integrating the Four Phases

Objective: Integrate all phases (approach, takeoff, flight, and landing) into one integrated performance.

Activities:

1. Watch an instructional video: Explain how to integrate all phases sequentially.
2. Homework: Watch a video demonstrating the full high jump performance.
3. Classroom Practice: Perform exercises to fully integrate all phases.

Unit 9-16: Advanced Drills and Review

Objective: Improve technical performance and provide practical challenges for students with advanced skills.

Activities:

1. Review Instructional Videos: Rewatch the instructional videos presented in previous weeks.
2. Homework: Watch advanced videos and analyze performance errors.
3. Classroom Practice: Perform advanced drills to improve technical performance.

Exercises to increase takeoff power, improve bar crossing accuracy, and develop landings.

4. Weekly Assessment: Evaluate students' progress by comparing past and current performance.
5. Final Practical Exams: Test students on all phases of the high jump (approach, takeoff, flight, and landing).

Notes:

- Each week, time is allocated to review instructional videos at home, followed by in-class drills to improve skills.
- Video cameras are used to analyze performance and continuously evaluate students.
- Corrective feedback is provided after each practical exam to help students improve their techniques.

Post-test:

The researcher conducted the post-tests in the outdoor playground of Al-Furqan Intermediate School for Boys on Tuesday, April 23, 2024.

Statistical Methods:

The researcher used the Statistical Package for Social Sciences (SPSS) program to analyze the research results, extracting the values of the arithmetic mean and standard deviation, and applying the t-test for correlated and uncorrelated samples.

Presentation and Discussion of the Results

Presentation of the Arithmetic Means, Standard Deviations, and Significant Differences for the Experimental Group in the Pre- and Post-test Results of the Tests under Study

Table (3) Arithmetic means, standard deviations, and significance of differences for the experimental group in the results of the pre- and post-tests in the tests under study

Group		Arithmetic mean	Standard deviation	Arithmetic mean of difference	Standard deviation of differences	Sig	Type Sig
Approach	Pre	8.2519	.22933	-6.40000-	1.57064	0.00	Sig
	Post	14.6519	1.51032				
Takeoff	Pre	8.1519	.37965	-4.97407-	1.17427	0.00	Sig
	Post	13.1259	1.27840				
Flight	Pre	7.4444	.50637	-5.45556-	1.60272	0.00	Sig
	Post	12.9000	1.23911				
Landing	Pre	7.4889	.47177	-5.12222-	1.57854	0.00	Sig
	Post	12.6111	1.32820				

Significant at a degree of freedom of (26) and a significance level of 0.05.

Table (4) Arithmetic means, standard deviations, and significance of differences for the control group in the pre- and post-test results for the tests under study.

Group		Arithmetic mean	Standard deviation	Arithmetic mean of difference	Standard deviation of differences	Sig	Type Sig
Approach	Pre	8.3444	.35119	-3.06296-	1.06162	0.00	Sig
	Post	11.4074	.84395				
Takeoff	Pre	8.2000	.56975	-2.76296-	.70719	0.00	Sig
	Post	10.9630	.19245				
Flight	Pre	7.6111	.66986	-2.31481-	1.12787	0.00	Sig
	Post	9.9259	1.24579				
Landing	Pre	7.4741	.48086	-2.50370-	.85507	0.00	Sig
	Post	9.9778	1.14298				

Significant at a degree of freedom of (26) and a significance level of 0.05.

Table (5) Arithmetic means, standard deviations, and significance of differences for the experimental and control groups in the post-test results of the tests under study.

Tests	Groups	Arithmetic mean	Standard deviation	Sig	Type Sig
Approach	Experimental	14.6519	1.51032	0.00	Sig
	Control	11.4074	.84395		
Takeoff	Experimental	13.1259	1.27840	0.00	Sig
	Control	10.9630	.19245		
Flight	Experimental	12.9000	1.23911	0.00	Sig
	Control	9.9259	1.24579		
Landing	Experimental	12.6111	1.32820	0.00	Sig
	Control	9.9778	1.14298		

Results and Discussion

1. Table (3): Shows the means, standard deviations, and significance of the differences for the experimental group.

This table shows the significant improvements in all tests for the experimental group (approach, ascent, flight, and landing). The means in the post-tests increased significantly compared to the pre-test values:

- Approach: from 8.2519 to 14.6519
- Takeoff: from 8.1519 to 13.1259
- Flight: from 7.4444 to 12.9000
- Landing: from 7.4889 to 12.6111

The researcher attributes this improvement to the flipped observational learning method, which combines active learning and educational activities, positively impacting performance. It is worth noting that the exercises or activities presented to them help develop their motor skills despite the various performance challenges. In this context, the process of observing and

interacting with test results can be considered to contribute to enhancing the learner's self-awareness of their performance, which is one of the pillars of flipped learning (Hew, 2014). In addition to the flipped observational learning method, active observation allows the learner to witness continuous improvement based on the skill requirements according to the targeted activity. Comparing the arithmetic means and differences between the pre- and post-tests, we find that learners in the experimental group, who used the flipped observational learning method, had a greater ability to absorb motor performance more quickly. This is part of Active Learning Theory, which suggests that learning is most effective when learners are motivated to interact with educational material repeatedly and effectively through programs and observation, which generates understanding and enhances long-term memory (Bonwell & Eison, 1991).

The researcher agrees with (Mahmoud, 2018) that learning based on modern strategies and diverse educational approaches, integrating field practice and scientific knowledge, and employing them in motor performance, such as feedback, learning, and critical thinking, helps develop motor proficiency.

2. Table (4): Arithmetic means, standard deviations, and significance of differences for the control group

In this table, we note that the control group showed improvement in the tests, but the improvement was less pronounced compared to the experimental group. Thus, the effect of flipped observational learning is more evident in the experimental group that received guided exercises.

In flipped observational learning, the learner is required to interact with the content through observation first, which enhances the actual understanding of the results. For example, observing how guided learning activities impacted the experimental group's progress makes it easier to understand the difference between learning through flipped classroom and traditional learning. Meanwhile, the control group, which did not receive the same type of program and exercises, showed less improvement, which can be explained by the difference in flipped classroom methods. The researcher agrees with Mustafa (2019) that the use of technology helps solve the problem of traditional learning and develops learners' thinking skills and mental abilities. Learners watch short video presentations at home and research the topic in class with other learners under the teacher's supervision. Studies such as those conducted by Bergmann & Sams (2012) on flipped learning indicate that methods that rely on interaction and self-criticism (as in observational learning) lead to enhanced understanding and retention of information. Learners in the experimental group benefited most from observing the direct results of the exercises according to their method, as observation and observation were the core learning factors that contributed to improved motor performance.

3. Table (5): Comparison between the experimental and control groups in the post-tests

In the post-tests, it can be seen that the experimental group demonstrated superiority in all tests compared to the control group:

- Approaching: (14.6519) experimental vs. (11.4074) control
- Takeoff: (13.1259) experimental vs. (10.9630) control
- Flight: (12.9000) experimental vs. (9.9259) control
- Landing: (12.6111) experimental vs. (9.9778) control

The researcher attributes this to the fact that, in the flipped observational learning method, learners can observe how learning has a greater impact on performance by monitoring changes in tests between the two groups. Watching these exercises based on educational videos allows them to understand the differences between traditional learning and flipped learning, enhancing their understanding of how educational activities can improve motor performance.

According to the observational learning theory developed by (Bandura, 1977), learning through observation is one of the most effective forms of learning, as learners by observing and watching them perform activities and learning from their experiences. In this context, learners in the experimental group benefited from continuous guidance and direct observation of the results achieved through the use of flipped learning methods, which led to further improvement in their performance. Furthermore, the kinematic models and skill sequencing that were presented visually enabled students to learn how flipped learning plays a key role in enhancing performance and how the impact of educational activities on motor progress enhances understanding and allows learners to better understand the effects of skill learning. This was confirmed by a study (Khalil, 2019) that flipped learning increased students' concentration, which was reflected in the development of technical performance skills. The researcher agrees with a study (Hassan, 2020) that the new educational environment for students contributed to increasing their desire and ability to learn and receive information and knowledge according to different learning situations, satisfying their needs, as they were presented to them for the first time in an enjoyable, engaging, and stimulating manner. Thus, this study confirms what (Ahmed Mohamed Adel Ahmed Atta ,2022) indicated, that learning through flipped learning was higher than traditional learning in terms of skill and knowledge levels in track and field competitions.

Conclusions and Recommendations:

Conclusions:

- 1- The research results showed that flipped observational learning had a positive and significant effect on improving motor performance in all phases of the high jump (approach, takeoff, flight, and landing) in the experimental group compared to the control group. This reflects the effectiveness of the flipped learning strategy in teaching complex motor skills.
- 2- There was a clear, significant improvement in performance between the pre- and post-tests, with students' average performance increasing significantly across all phases of the high jump. However, the improvement in the control group was lower, demonstrating that observational learning enhances students' ability to understand and correct performance techniques more quickly than traditional methods.
- 3- The flipped learning method enabled students to review model performances more than once, which helped improve motor coordination and precision. This promotes self-learning and increases students' motivation to improve their own performance.
- 4- The instructional theory is supported, as students who watched movement models before the practical application demonstrated a greater ability to imitate correct performances and correct movement errors.
- 5- Despite the effectiveness of flipped learning, students' interaction during practical sessions with the teacher and their peers, as well as immediate feedback, played a significant role in correcting errors and achieving tangible improvements in motor skills.

Recommendations:

- 1- Integrate the flipped learning method into physical education programs, allowing students to watch demonstration videos of motor skills and then practice them in class. This contributes to improving students' understanding of motor techniques and increasing performance accuracy.
- 2- Encourage students to watch instructional videos multiple times outside of class to enable them to consolidate motor information and achieve rapid improvement in high jump techniques.

- 3- Develop interactive educational applications through which students can view motor models and review performance techniques on smartphones or tablets, which enhances self-learning and increases student motivation.
- 4- It is recommended that future studies compare the flipped learning method with traditional methods in other sports, such as gymnastics, swimming, or football.
- 5- Expand the scope of research to include different groups of students in terms of physical experience and age.

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Appendix (1)

Shows the form prepared by the researcher and experts to evaluate the technical performance of the high jump event.

No.	Approach %(25)	Takeoff %(25)	Flight %(25)	Landing %(25)

Appendix (2)

Indicates the names of the evaluators for the high jump event.

Specialist Name	Academic title	Specialization	Affiliations
Sarih Abdul Karim Al-Fadhli	Prof. Dr.	Athletics	Dean of Ashur College
Haider Faiq Al-Shamaa	Prof. Dr.	Athletics	College of Physical Education and Sports Sciences, University of Baghdad
Haider Nawar Hussein	Assist. Prof. Dr.	Athletics	Ministry of Education

Appendix (3) Sample teaching unit: Learning the high jump using the flipped observational learning method. Lesson duration: 45 minutes.

Time (minutes)	Activities	Objective	Content	Teaching tools
0-5	Introduction and explanation of lesson objectives	Introduce the high jump and lesson objectives.	Definition of high jump and the importance of learning it in athletics	High jump introductory video
5-15	Review of the educational video	Display high jump movement models.	An educational video explaining the basic stages (approach, take-off, flight, landing)	An educational video explaining each stage in detail.
15-20	Discussion of questions and comments	Discuss the videos with students.	Ask students questions about the videos to help them focus on mistakes and correct techniques	Group discussion and use of the whiteboard to clarify points.

20-30	Practical training (Phase 1)	Practice the approach phase.	Perform practical exercises to improve approach steps	Training barriers, dedicated playground, live error correction, video camera, video analysis applications for student performance
30-35	Self-assessment using video	Practice the students' self-assessment of their performance.	Students observe themselves during the practical application and identify mistakes themselves	Training barriers, dedicated playground, live error correction, video camera, video analysis applications for student performance
35-40	Practical training (Phase 2)	Practice the takeoff and flight phases.	Perform exercises to improve take-off and flight techniques in the high jump	Training barriers and markers, dedicated playground, direct error correction
40-45	Final feedback and closure	Provide feedback on performance and conclusion.	Provide feedback on student performance, with tips for improving future performance	Verbal feedback, error correction, and encouragement for improved performance