Journal of Physical Education

Volume 37 – Issue (3) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729

https://jcope.uobaghdad.edu.iq

# The Effect of Problem-Based Learning Instructional Units on Acquiring the Kip-Up Skill on the Horizontal Bar

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DOI:
https://doi.org/10.37359/JOPE.V37(3)2025.2189


**Article history:** Received 29/ July/2025 Accepted 29/ January/2025 Available online 28/ September/2025

## Abstract

The research problem emerged from the researcher's observation that many students encounter difficulties in learning certain curricular skills in gymnastics, particularly the kip-up skill on the horizontal bar, which is considered challenging due to the lack of understanding of the correct technique and the inability to visualize the appropriate movement pathway for performing the skill. This prompted the researcher to investigate the problem and attempt to provide a solution. The importance of the study lies in designing instructional units based on the problem-based learning approach and examining their effect on acquiring the kip-up skill on the horizontal bar, with the aim of assisting students in mastering this skill through a modern instructional strategy. The researcher employed the experimental method with two groups, experimental and control, as it was suitable for the nature and objectives of the study. The research population consisted of 247 third-year students in the College of Physical Education and Sports Sciences at the University of Diyala during the academic year 2023–2024, from which a sample of 16 students was selected for the experimental group and 16 for the control group. Pre-tests were conducted prior to the intervention. The results indicated that instructional units designed according to the problem-based learning approach are effective in teaching the kip-up skill on the horizontal bar to students at this level, and the researcher recommended adopting such instructional units due to their positive impact on skill acquisition.

**Keywords:** Instructional units, Problem-based learning, Kip-up on the horizontal bar.

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Volume 37 – Issue (3) – 2025 Open Access
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## Introduction

The concept of the instructional unit is regarded as one of the educational terms that emerged in response to the development of the teaching–learning process, aiming to achieve modern curricula that meet the demands and challenges of the contemporary era. Scholars and experts have long debated the definition of this term until it became established as a curricular framework or organizational method. This aligns with Al-Saeed and Gaballah (2014), who defined instructional units as "a part of the curriculum, a specific organization of the subject matter, and a teaching method that places students in learning situations which, as a whole, form an integrated unit with clear objectives that can be achieved through these situations." Similarly, Fawzi (2014, p.40) stated that "an instructional unit is a set of classroom procedures adopted by the teacher to implement a given subject matter characterized by integration, coherence, and objectivity, placing students in comprehensive learning situations that stimulate their interest and require them to perform diverse activities that allow them to gain specific experiences and achieve predetermined educational objectives." Among the modern teaching strategies is problem-based learning, which, according to Al-Balushi (2009, p.263), "was formally introduced into the field of education and teaching by Barrows, who applied it as a novel and alternative method in training medical students at McMaster University in Canada in the 1950s, by presenting real and authentic problems for students to investigate and generate solutions for." This type of learning helps students make sense, construct understanding and have the self-confidence to take on future problems as they will develop the ability to produce scientific and practical solutions themselves (without having ready-made answers). This makes learning to be meaningful, purposive and not mechanical as rote memorization thus can help student excel and become satisfied with their learning enterprise (Zeitoun 1992:53). Educators have attempted to offer multiple and versatile learning environments in order for learners`education gain to be increased in the case of gymnastics, a sport like any other very rigorous and accurate that situations where the teacher approaches for facilitating students' learning will be analyzed. As Bormann (1987, p.269) highlighted, "kip movements are among the most important linking movements; despite variations in the starting style and grip, the performance technique remains consistent, as the swing energy is transferred to the trunk upon deceleration, and by using the reaction of support, the body can rise to a higher position on the apparatus." The primary aim of the kip movement, according to Liersch and colleagues (1978, p.70), "is to move the body from a lower level to a higher one by flexing and extending at the hip joint."

After observation and review, the researcher found that most students encounter difficulties in learning certain curricular skills in gymnastics, particularly the kip-up skill on the horizontal bar. This skill is considered challenging for students due to their lack of understanding of the

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correct technique and their inability to visualize the appropriate movement pathway required to perform the skill.

**Research Objective**: To identify the effect of using instructional units based on the problem-based learning approach on acquiring the kip-up skill on the horizontal bar.

**Research Hypothesis** :There are statistically significant differences between the experimental and control groups in favor of the experimental group.

**Scope of the Study**

**Human Scope:** Third-year students at the College of Physical Education, University of Diyala.

**Spatial Scope:** The gymnastics hall at the college.

**Temporal Scope:** From December 17, 2023, to March 26, 2024.

**Methodology**

The researcher employed the experimental method using a pre-test and post-test design for both the experimental and control groups, as it was suitable for the nature and problem of the study.

**Research Sample**

The research population consisted of third-year students at the College of Physical Education and Sports Sciences, University of Diyala, for the academic year 2023–2024. The study sample included 32 students selected randomly. The experimental group consisted of 16 students chosen by random draw, and the control group also included 16 students selected in the same manner. Additionally, a pilot sample of 5 students from the third-year cohort, who were not part of the main study sample, was used for preliminary testing.

**Data Collection Tools**

References sources and, Arabic and foreign sources (and a results filing form). Equipment) An HP computer and a Sony video camera were used to capture information from the students' performance both during learning and assessment of the kip-up on horizontal bar skill.

**Procedures**

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A number of methods were used to carry out the research in this study. Three raters evaluated the performance of the kip-up skill on horizontal bar for all participants of the study sample by a 10-point scale. A pilot-test was performed on Sunday December 17th, 2023 at 8:30 a.m. in the gymnastics hall and involved five students, with no participation in the overall study sample, belonging to the third-year class. The prescreening of the research group took place on Wednesday, December 20th, 2023 at 10:30 am in the gymnastics hall. Throughout tests, the researcher controlled the standardish of all test conditions in terms of time, place, apparatus and application procedure to minimize variability and control pre- and post-tests. The main experiment was conducted from December 24, 2023, to February 11, 2024, during which the instructional units based on the problem-based learning approach were applied. Each instructional unit lasted 45 minutes, with one unit delivered per week over eight weeks. The subject teacher provided explanations and demonstrations of the skill according to the curriculum for both the experimental and control groups. The control group received traditional instruction, while the experimental group was taught using the problem-based learning approach. The researcher's role was limited to preparing the instructional units, monitoring the progress of the experiment, controlling time and repetition, and supervising the implementation of all instructional units. Post-tests were conducted on Wednesday, February 14, 2024, at 10:30 a.m. in the gymnastics hall under the same conditions as the pre-tests to ensure high reliability of the results.

## Statistical Analysis

The Statistical Package for the Social Sciences (**SPSS**) ver.26

## Results

**Table 1: Shows the means and standard deviations for the pre-test and post-test for the experimental and control groups**

| group | Test | N | Mean | Standard Deviation | Standard Error |
|---|---|---|---|---|---|
| **Experimental Group** | Pre-test | 16 | 2.389 | 0.054 | 0.013 |
| | Post-test | | 5.556 | 0.029 | 0.007 |
| **Control Group** | Pre-test | 16 | 2.432 | 0.068 | 0.017 |
| | Post-test | | 3.902 | 0.054 | 0.014 |

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**Table 2: Shows the differences in means, standard deviations, standard errors, t-values, and significance levels for the experimental and control groups.**

| Variables | Mean Difference | Standard Deviation Difference | Standard Error | t-value | Sig. |
|---|---|---|---|---|---|
| **Experimental Group** | -0.167 | 0.062 | 0.015 | 10.796 | 0.000 |
| **Control Group** | -2.500 | 0.966 | 0.242 | 10.351 | 0.000 |

## Discussion

It can be observed from Table 1 that there are significant differences between the pre-test and post-test in the kip-up skill test in favor of the post-test, indicating an improvement in the performance level of the study sample as a result of the instructional units based on the problem-based learning approach. The researcher attributes this improvement to the fact that students, when exposed to any new learning experience, acquire additional knowledge and skills, as reflected in the performance scores of each individual. This improvement in skill execution aligns with the observations of many experts in the field; Talha et al. (2006) noted that when beginners learn a new sports skill, there are varying performance levels during the initial days of learning, with some learners taking longer and others mastering the skill more quickly, while some fall in between these two extremes. The outcomes emerged revealing the competitiveness of PBL-based instructional units and their varying levels of contribution to students' performance. Mohamed Odeh Al-Rimawi (1994) underlined the importance of employing educational strategies that enhance each student's ability to solve their own problems, promote self-assessment and raise learning motivation.

Towards the control group, as Table 1 illustrates it significant differences in favour of post test with respect to pre test are alsodiscovered. The researcher has accounted for this improvement from the teaching strategies that the teacher used and led to a little development on part of Control as compared to Experimental.

The experimental group's scores in the post-test are significantly higher than those of the control group as may be attributed to the effectiveness of the instructional units developed based on problem-based learning. The researcher further reports that the experimental group had a better performance than the control group because this type of learning improved some features like active learners who participate in tasks, which resulted in a better performance. On the other hand, the control group was instructed traditionally, with an emphasis on passive reception of

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knowledge and little practice, which led to a lower level of performance and less chance of compensating for errors when performing the skill. The outcomes of the experiment on the treatment group is can be considered as follow: With some reason, we believed that two minimum instructional units and problem-based learning strategy have had an influence on the better skill acquisition in pretest-posttest again with significant level in kip-up test translation before exercise unit (office another)from experimental groups. Two, the best learning model is visual and one can learn faster with more senses are engaged for receiving/processing information this was reiterated by Farida Ibrahim too.

## Conclusions

Problem–based learning is a major driving force to help reinforce and preserve the development or learning of kip-up. A visible enhancement in the execution of kip-up skill was seen when following this suggestion and structuring the content of teaching units in such a way, which had lead to this development. The incorporation of the problem-based learning approach had a significant positive impact on the acquisition of skills and subsequent student performance.

## Recommendations

The kip-up is emphasized to learn through PBL method. The use of alternative forms of modern learning should also be included, as they generate interest and enhance students' motivational disposition towards the learning process. In addition, PBL approach is suggested for teaching other sports skills and activities in order to improve learning results and students' involvement.

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