INDONESIAN JOURNAL OF SPORT MANAGEMENT
Department of Physical Education, Universitas Majalengka, Indonesia
ISSN 2776-706X.

# Effect of the Bocartes Model on Cognitive Knowledge and Learning the Long Jump Event for Students

Amena Kareem Hussein

College of Physical Education and Sports Sciences, Kirkuk University, Iraq

## ABSTRACT

The current work aims to identify the effect of the Bocartes model on cognitive knowledge. As well as to identify the effect of the Bocartes model on learning the long jump event. The researcher used a two-group (experimental and control) experimental design. The researcher identified her research population as first-year students at the College of Physical Education and Sports Sciences, Kirkuk University for the academic year (2023-2024), numbering (213) students. As the long jump event is part of the vocabulary of a curricular subject at this stage. The research population was divided into four groups. The results showed that the directed-Bocartes model had a positive impact on the cognitive knowledge process. The experimental group outperformed the control group in cognitive knowledge experience. The directed-Bocartes model had a positive impact on learning the long jump. This is through significant differences in favor of the post-test for both the experimental and control groups. One of the most important recommendations is to adopt the directed-Bocartes method when teaching sports events in the arena and field, including the event of the long jump. Also, to adopt cognitive knowledge as a basis in the educational curricula and as required to learn different skills.

**Keywords:** Bocartes Model; Cognitive Knowledge; Event of Long Jump

**Corresponding author:**
* Muhammad Suhail Najm, College of Physical Education and Sports Sciences, University of Mosul, Iraq. Email: thabih987@gmail.com

**Article History:**
Submitted: July, 2024
Accepted: July, 2024
Published: August, 2024

**Authors' contribution:**
A) Conception and design of the study;
B) Acquisition of data;
C) Analysis and interpretation of data;
D) Manuscript preparation;
E) Obtaining funding.

**Cite this article:**
Hussein, A. K. (2024). Effect of the Bocartes Model on Cognitive Knowledge and Learning the Long Jump Event for Students. *Indonesian Journal of Sport Management*, 4(3), 383-392. https://doi.org/10.31949/ijsm.v4i3.10728

## INTRODUCTION

The sports field, especially the educational field, has received a large share of countries' interests so that the educational process proceeds according to an integrated scientific system to achieve development in all areas of this process. In order to achieve development in the educational process, trainers and teachers have long sought to search for modern and diverse educational models that help students organize their self-learning and raise their level by allowing them to participate in the educational process. One of the models of self-regulated learning is the Bocartes model, which is the basis of the amount of guidance provided by the teacher (Raghad, 2022) confirms that the Bocartes model makes the student more active because he analyzes the tasks presented to him by the teacher and plans the goals to be learned.

The researcher has adopted this model, which allows the learner to rely on himself and be self-organized in learning the long jump kinetic event and in finding solutions to the problems he encounters in the learning process. The results of using this model on learners will enhance their potential and abilities in learning the long jump event. In addition to the mental processes that will be strengthened in them,

The Author(s). 2024 **Open Access** This article is licensed under a ***Creative Commons Attribution-ShareAlike 4.0 International (CC BY-SA 4.0)***, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third-party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit: https://creativecommons.org/licenses/by-sa/4.0/

which is an essential factor in learning any skill. That cognitive knowledge is the interaction of several sensations at the same time, and distinguishing between sensation and cognitive knowledge can help us understand these terms better. Sensation means receiving the stimulus, while cognitive knowledge means interpreting the stimulus.

Thus, cognitive knowledge is of great importance in various fields because of its importance in all normal daily movements. It means recognizing most things in our external surroundings through our senses, which we can interpret in order to match appropriate and different responses in the external world in which we live. In the field of physical education, cognitive knowledge occupies a large space, because it is involved in the specificity of every sports game. This is what we observe in the long jump event, which is one of the track and field sports events that require mental processes such as attention and cognitive knowledge.

Therefore, cognitive knowledge is not the same degree for everyone, even if the environmental stimuli are the same. As cognitive knowledge is affected by subjective and objective factors. It is essentially holistic. That is, the individual perceives the whole first and then it is analyzed into its constituent parts. The learner's cognitive knowledge is the interpretation of sensations through information stored in memory.

The importance research as the result of previous experiences in this situation, the learner can, through cognitive knowledge, determine the appropriate place for other different situations in the game. The importance of the research lies in the fact that the Bocartes model works to develop the learner's cognitive knowledge by making him a participant in the educational process and not just a performer. This is done by providing him with the opportunity to practice learning methods and processes on his own through his thinking and deduction, using his information and thinking methods to reach logical results for learning the skill of the long jump.

To study the problem of this work we find that the mental aspect, with all its cognitive procedures and means, plays a fundamental role in the positive impact on motor performance in terms of its connection with other aspects of learning, such as the physical, psychological, and other aspects. This is because the mental aspect helps the learner focus and cognitive knowledge of the positive aspects. It works to anticipate response and good performance and prevents the occurrence of negative perceptions that harm skill performance through negative emotions. This causes increased anxiety and failed expectations. The correct response and good performance come through the learner perceiving and interpreting information about the long jump event. This only happens when the learner organizes himself, his capabilities, and his mental abilities, and this happens by following different educational models.

Therefore, the researcher decided to develop educational units according to the Bocartes model, in which the teacher sets several questions that help the student move freely in educational situations. Reviewing the overall details of the event to consider it more effective than the usual method, because it works to give the student a role in demonstrating what he has learned from the long jump event. Also, to find out its effect on cognitive knowledge and learning the event of the long jump.

The objectives of the current work are to recognize the effect of the Bocartes model on cognitive knowledge. And to recognize the effect of the Bocartes model in learning the long jump event.

Therefore, the hypotheses of this work are:

1. There are no significant differences between the results of the (experimental and control) groups in the pre-and post-tests of knowledge and cognitive knowledge.
2. There are no significant differences between the results of the (experimental and control) groups in the post-test of knowledge and cognitive knowledge.
3. There are no significant differences between the results of the control and experimental groups in the pre-and post-tests in the long jump event test.
4. There are no significant differences between the results of the experimental and control groups in the long jump event posttest.

## METHOD

A two-group experimental design (experimental and control) is used. The researcher identified her research population as first-year students at the College of Physical Education and Sports Sciences, University of Kirkuk for the academic year (2023-2024). As the long jump event is among the vocabulary of a curricular subject in this academic stage, and the number is (213) students. The research population was divided into four divisions, Division A (54 students), Division B (54 students), Division C (56 students) and Division D (49 students). The researcher chose her sample from sections (A) and (B) randomly, in two groups: the first control group, numbering (12) students, followed the curriculum followed in the college. The second experimental group, numbering (12) students, followed the Bocartes model, which included the same exercises followed in the college. She selected (10) students for the purpose of conducting the pilot experiment on them. Thus, the research sample constituted (11%) of the research population. In order to avoid factors that affect the results of the experiment and attribute the differences to the experimental factor, the researcher conducted homogeneity on her research sample of (24) students in the variables (height, weight, and age). The results of Table (1) showed that the research sample was homogeneous. As the calculated skewness coefficient was limited to (±3), and this is a good indicator that the distribution is moderate or close to it.

**Table 1.** Homogeneity of the sample in the variables of height, weight, and age

| No. | Variables | Measuring unit | AM | SD | Med. | Skewness Coefficients | Sig. Level |
|---|---|---|---|---|---|---|---|
| 1 | Height | Cm | 175.95 | 5. 83 | 176 | - 0.03 | Random |
| 2 | Weight | Kg | 70 | 8.16 | 70.5 | - 0.18 | Random |
| 3 | Age | Year | 20.73 | 72.0 | 20.9 | - 0.70 | Random |

The researcher conducted equivalence between the two research groups in testing cognitive knowledge and long jump events. It appears in Table (2) that the calculated (T) value between the results of the two research groups is less than the tabular (T) value of (2.05) under a DF (degree of freedom) 38 and a significance level of (0.05). This is an indication that the two research groups are equivalent.

**Table 2.** Equivalent of the experimental and control groups in the variables (understudy)

| No. | Variables | Measuring unit | Experimental | | Control | | Calculated (T) value | Statistical Sig. |
|---|---|---|---|---|---|---|---|---|
| | | | AM | SD | AM | SD | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | Cognitive Knowledge | Degree | 112.17 | 3.33 | 109.83 | 3.30 | 1.726 | Non-significant |
| 2 | Long jump event | Distance | 1.92 | 0.82 | 1.46 | 0.40 | 1.741 | Non-significant |

It is clear from Table (2) that the calculated (t) value is smaller than the tabulated (t) value in all pre-tests. It indicates that there are no significant differences between the experimental and control groups. This indicates the equivalent of the sample in the pre-test.

**Instrument of collecting information:**
1- Observation.
2- Interview.
3- Questionnaire.

**Instrument of collecting information:**
1- Scientific sources and references.
2- The international network (the Internet).
3- Tests and measurements.

**Instrument of data analysis:**
1- Forms of Data collection and emptying.
2- Electronic calculator.
3- Manual calculator.

**Means of Assistance:**
1- A stadium for performing the long jump.
2- An electronic stopwatch, Sony, of Korean origin, to know the time taken to answer the (cognitive knowledge) scale.
3-Sony camera.

**Field research procedures: Determine the test for the long jump event. (**Hanan et al. 2022, p. 369**).**
**Purpose of the test:** Measuring the explosive power of the leg muscles.
**Required Equipment**: A suitable area for jumping with a width of 1.5 meters and a length of 3.5 meters. The area should be flat, obstacle-free, and non-slippery.
- Measuring tape.
- Take-off line.

**Performance Description**
The tester stands behind the takeoff line with feet slightly apart and parallel, so that the metatarsals touch the starting line from the outside. The tester begins by swinging the arms forward, downward, and backward with bending the knees and leaning the torso slightly forward. From this position, the arms swing powerfully forward while the legs extend along the torso, and the feet push forcefully off the ground in an attempt to jump forward as far as possible.

**Conditions**: The jump distance is measured from the outer edge of the starting line to the closest mark left by the tester near the takeoff line, or to the point where the heels touch the ground if that is the closest mark to the takeoff line.
- The takeoff is performed with both feet together, and the landing is also done with both feet together.
Note: The starting line is 5 cm wide and is included in the measurement.

**Cognitive knowledge test (**Kazem Mohsen Kuwaita 2020**)**

The researcher relied on the researcher's cognitive knowledge scale (Kazem Mohsen Kuwaita 2020). The scale consists of 32 items according to a five-point Likert scale. The highest score on the scale is 190, and the lowest score on the scale is 32. The hypothetical mean for the scale is 96. The scale's validity is 0.89 and its reliability is 0.84.

**Exploratory experiment**

The pilot experiment was conducted on (10) students of the second stage who were not part of the research sample. It took place on February 16, 2023 AD at 10:30 am in the stadium of the Sports Activity Directorate in the Kirkuk Education Directorate. It is the same place where the main experience will be conducted. The cognitive knowledge test was administered to the students within the allotted time. Long jump tests were also conducted to identify the difficulties faced by the researcher.
- Knowing the validity of the devices and tools used.
- Ensuring the suitability and ease of the tests used in the research.
- Knowing how long the tests take.
- Ensuring the readiness of the assistant work team to implement the tests.

**Field experiment procedures**:

The main field experiment procedures included the following:
Introductory units**:** The researcher conducted two introductory units, the first on 17/2/2024 and the second on 18/2/2024. It dealt with the long jump event and the cognitive knowledge (under study) in a preliminary manner. Each units lasted (90) minutes, in the stadium of the Directorate of Sports Activity in the Kirkuk Education Directorate.

Pre-tests: The pretests were conducted after completing the introductory units on February 21, 2024. The cognitive knowledge test was conducted according to the time specified for the test. Then the long jump event test was conducted in the stadium of the College of Physical Education and Sports Sciences, University of Kirkuk.

Preparing educational units according to the Bocartes model**:** The researcher reviewed many interconnected researches, thesis, and dissertations that investigated the subject of self-regulated learning. The researcher prepared (10) educational units according to the Bocartes model. The duration of the educational unit was (90) minutes, at a rate of two units per week.

The researcher decided to move the educational part from the main section to the preparatory section in order to meet the requirements of the model, by presenting the long jump event and physical abilities exercises using educational films and the display screen. The researcher allocated 20 minutes to the subject teacher (a period which decreases over time and is added to the application of physical and skill exercises).

Here, the stage of organizing the information processing system was employed. So that the teacher used images, sound, and slow motion to present the skill and all the details of the event in front of the students in a classroom designated for watching the videos before applying them on the playground.

• The administrative aspect included 2-3 minutes to monitor students' attendance and their sports uniforms.

• Introduction and physical exercises 6-7 minutes. The exercises varied between physical and skill.

**The main section: 40 minutes.**

The subject teacher gave the applied activities 20 minutes by performing physical and skill development exercises for the long jump event during the stage of organizing the learning process**.** After explaining and presenting the theoretical material and the activity by the teacher, the assignment sheet is distributed to the groups (each group has 3 students). They perform the exercises attached to the assignment sheet, adopting the self-regulation stage.

**The closing section: 5 minutes.**

In this part, the subject teacher gives the students recreational exercises and competitive races among them.

**In addition, there are some things that must be followed by the researcher:**

1. The researcher emphasized the principles of the Bocartes model as follows:

a) Motivation control: This increases students' motivation through the learning part of the educational unit.

b) Emotional control: The role of students in controlling and adapting the emotional aspects of the learning process through performing physical and educational exercises for the event.

c) Action Control: The student's ability to initiate and persist in executing physical and skill development exercises. Also, their ability to perform these exercises with high spirits and positive competition among student groups.

2. The researcher prepared 10 educational units according to the Bocartes model before the beginning of the experiment.
3. The researcher conducted a workshop before the start of the experiment for the subject teacher to inform them about how to teach according to the Bocartes model.
4. The researcher prepared a detailed assignment paper on the physical and skill exercises for the long jump event.
5. The researcher divided the students into groups of (3-4) to perform the exercises.

The implementation of the educational units began on 28/2/2024 and continued until 2/5/2024. On this basis, the total time of the educational section during (10) educational units is (320) minutes. While the total time of the applied section was (720) minutes, the remaining time was distributed among the preparatory section (240) minutes during (16) educational units, and the closing section (160) minutes during (16) educational units.

**Post-tests:**
The post-tests were conducted using the same method as the pre-tests on 9/5/2024. The cognitive knowledge test was conducted within the specified time for the test. As well as a test of the long jump event. The researcher used the SPSS statistical package.

## RESULTS AND DISCUSSION

Table 3 shows the values of AM (arithmetic means), SD (standard deviations), the value of (AM. Differences) the arithmetic means of the differences, the deviations of the differences from their arithmetic mean (SD. Differences), the calculated and tabulated values t, and the significance of the differences between the pre-and post-tests of the experimental group in cognitive knowledge and the event of the long jump

**Table 3.** Results of AM, SD, AM. Differences, SD. Differences, t-calculated and significant

| Variables | Measuring Unit | Pre-test | | Post-test | | AM. differences | SD. Differences | t-calculated value | t-tabulated value | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | AM | SD | AM | SD | | | | | |
| Cognitive knowledge | Degree | 112.17 | 3.33 | 136.25 | 16.79 | 24.08 | 16.60 | 5.02 | 2.20 | Sign. |
| Long jump | Distance | 1.92 | 0.82 | 7.5 | 0.85 | 5.58 | 0.79 | 24.39 | | Sign. |

It is clear to us from Table 3 the values of the AM, SD, AM Differences, SD Differences, and the calculated and tabulated t-value, the significance of the differences in the pre-and post-tests of the experimental group in cognitive knowledge and the event of the long jump.

According to the above, it is clear from Table 3 that there are significant differences in the perceptual knowledge test for the experimental group, in favour of the post-test. The researcher attributes the reason for this to the effectiveness of the educational curriculum using the Bocartes model for the experimental group of the research sample. The model works to develop cognitive knowledge which helps the student achieve more understanding of the nature of performing the long jump event. In this model, the learner searches for facts and laws on his own, using many intellectual processes such as comparison – application – guesswork – analysis – conclusion and innovation (Ahmed Belaid 2019, 96. Thus, this model works to develop the students' mental processes through a set of questions posed by the teacher and his answers to them, which helps the student achieve more understanding of the nature of performing the long jump event. This makes him perform better and gives him an active role in completing the educational process and achieving self-regulated learning and skill -performance on his own. Also, applying what he discovered practically by thinking about the perception of correct performance, which leads to cognitive knowledge in performance. (Al-Sultan & Muhammed, 2022).

The researcher attributes this to the fact that the Bocartes model is the process of engaging the student in the Bocartes process. This prompts the student to pay attention to the process of collecting information and organizing learning independently. This emphasizes the sequential and positive interaction between teacher and student. It is a model that directly emphasizes logical chains of gradual

succession. As this logical sequence will lead the learner to Bocartes, relying logically on the basic principles and constructive successive ideas in setting goals. This was clearly demonstrated in the post-test regarding the event of the long jump (under study). The truth is that the effective and constructive relationship that existed in the experimental sample between the teacher and the learner-led to an increase in the learner's confidence in the teacher and thus to the development of the learner's ability to self-regulated learning responses that answer successive and logical questions by the learner. (Majed 2022).

This led to optimal learning for the experimental sample. This is indicated by (Mustin Washwart) the relationship between the teacher and the student, through which successive questions directed by the teacher lead to arriving at responses made by the student (Wahab & Hekmat 2022). Additionally, the learner's awareness of the results of their responses is one of the key principles for learning to occur. An educational method that requires the learner to engage in a specific activity, such as answering a question, needs to provide feedback after the activity is completed. This feedback informs the learner of the outcomes of their activities, stimulating their motivation and encouraging them to continue learning" (Dhiab, 2016).

Table 4 displays the values of the AM, SD, AM Differences, SD Differences, t-values of calculated and tabulated, and the significance of the differences between the pre-and post-tests for the control group in cognitive knowledge and long jump event.

**Table 4**. Results of AM, SD, AM. Differences, SD. Differences, t-calculated and significant

| Variables | Measuring Unit | Pre-test | | Post-test | | AM. differences | SD. Differences | t-calculated value | t-tabulated value | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | AM | SD | AM | SD | | | | | |
| Cognitive knowledge | Degree | 109.83 | 3.30 | 121.33 | 8.60 | 11.5 | 8.15 | 4.89 | 2.20 | Significant |
| Long jump | Distance | 1.46 | 0.40 | 4.75 | 0.92 | 3.29 | 0.99 | 11.55 | | Significant |

It is clear to us from Table 4 values of the AM, SD, AM difference, SD differences and t- calculated and tabulated, the significance of the differences in the pre-and post-tests of the control group in cognitive knowledge and the long jump event. The results of the AM (arithmetic means), SD (standard deviations), t-calculated and tabulated values, and the significance level of the post-tests for the experimental and control groups in cognitive knowledge and long jump are shown in Table 5.

**Table 5**. AM, SD, calculated and tabulated (T) value, and significance level for post-tests for the experimental and control groups in cognitive knowledge for the long jump event

| Variables | Measuring Unit | Control | | Experimental | | Calculated (T) value | Tabulated (T) value | Statistical Sig. |
|---|---|---|---|---|---|---|---|---|
| | | AM | SD | AM | SD | | | |
| Cognitive knowledge | Degree | 121.33 | 8.60 | 136.25 | 16.79 | 2.739 | 2.07 | Significant |
| Long jump | Distance | 4.75 | 0.92 | 7.5 | 0.85 | 7.607 | | Significant |

Table 5 shows us the values of the AM, SD, and AM difference in the post-tests of the experimental and control groups in cognitive knowledge and long jump event. We see from Table 5 that the differences are statistically significant in favour of the experimental group. This is attributed to the importance of the Bocartes model and the questions it includes, which were incorporated into the educational units' curriculum and answered by the students. The Bocartes model works by involving the student in the process of self-regulated learning and understanding the skill acquisition method, which helps in developing the cognitive attributes of the student. This is evident in the long jump event, which is one of the activities requiring mental processes such as attention and cognitive knowledge. So cognitive knowledge works to continue learning the event. The development of cognitive abilities is crucial for learning technical performance. As no individual can achieve skillfulness in motor performance without having a complete and effective cognitive function (Al-Tuwaijri, 2010).

The higher the level of cognitive knowledge, the higher the level of skill performance in the long jump event. Table 5 showed that there were significant differences in favor of the experimental group in the post-measurement of long jump skill. The researcher attributes the reason for this to the fact that the Bocartes model pushes the student to gather more information that surrounds everything that the skill needs to achieve the answer to many questions that have formed in the student's mind about the skill performance of the long jump event. This is what the control group did not have the opportunity to do.

The student here depends to a large extent on the teacher to obtain it, especially since this information comes from the source of learning (the teacher). This provides a greater opportunity to correct errors without fixing them, which led to the student reaching a large degree of exploration, which the control group did not achieve. (Hussein et al., 2023).

As for the absence of significant differences between the experimental and control groups in the long jump event, the researcher attributes this to the appropriate feedback given by the teacher during and after performance in the traditional model (Hussein, 2023). The learner receives varying degrees of external assistance, and this assistance gains its importance in learning situations, as it ensures more than just acquisition, that is, it includes developing the motor effectiveness of the long jump (Al-Darabkeh, 2018).

## CONCLUSION

The results showed that the directed-Bocartes model has a positive effect on the cognitive knowledge process. The experimental group outperformed the control group in cognitive knowledge experience. The directed Bocartes model has a positive effect on learning the long jump event, through significant differences in favour of the post-test for the experimental and control groups. The experimental group outperformed the control group in learning the long jump event.

## REFERENCES

Adel A. D. (2016). The Effect of Playing-Style Exercises in Improving Motor Response and some Basic Skills among Female Students of the College of Physical Education and Sports Sciences in futsal, published research, Journal of Contemporary Sports Sciences, 8 (24).

Ahmed B. (2019) The Impact of a Guidance Program Based on Self-Regulation Learning Strategies on Improving the Academic Performance of Low-Performing First-Year Secondary Students, doctoral dissertation, Department of Psychology, Educational Sciences, and Orthopedics, College of Humanities and Social Sciences, University of Batna.

Hanan A. A., Abu Bakr B. A., Marouj T. J. (2022) The Percentage of the Contribution of some Physical Abilities at the Digital Level to the Effectiveness of the Long Jump for Female Students of the College of Physical Education and Sports Sciences, Journal of Sports Sciences, 14(51), 357

Hussein, A., Majid, S., Hassan, S. (2023) The Effect of Employing the Knowledge Economy using a Problem-Solving Strategy in Learning Basic Tennis Skills. SPORT TK – European American Journal of Sports Sciences, 12, 3.

Kazem M. K. (2020) Cognitive Knowledge and its Relationship to Logical Thinking among University Students, published research, Nasq Journal, 39 (04a).

Majed, S. S. (2022) The Effectiveness of the Six Thinking Hats Strategy in Testing the Cognitive Achievement of Handball Basic Skills. SPORT TK-Revista EuroAmericana de Ciencias del Deporte, 11 (20)

Muhammed B A. (2010) Self-Regulated Learning Strategies in Light of the Pintrich Model and their Relationship to Achievement, Specialization, Academic Level, and Preferred Style of Learning, doctoral thesis, Department of Psychology, College of Social Sciences, Riyadh, Imam Muhammad bin Saud Islamic University, p. 45.

Muhammed M. A. (2018) Self-Regulated Learning Strategies among Gifted and Non-gifted Students in the Hail Region: a comparative study, published research, Journal of the College of Education, vol. 34, no. 6. Assiut University. Faculty of Education: Egypt.

Munira A. A., Muhammed A. M. (2022) Self-Regulated Learning and its Relationship to Self-Efficacy among Common First-Year Female Students at King Saud University, published research, Journal of Educational and Psychological Studies, 16 (3).

Nabil A. W. Ali H. (2021) The Latest in Learning and Teaching Strategies, Dar Al-Wefaq for Publishing, Distribution and Printing, Amman, Jordan.

Raghad J. S. (2022) The Effect of the Bocartes Adaptable Learning Model Supported By Habeer Media in Learning Some Football Skills for Fourth-Grade Preparatory School Students, published research, Journal of the College of Basic Education, 28 (114), p. 276.