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Impact of Using the INTUSTEL Model in Creative Thinking and the Acquisition of Performing Some of the Football Skills by Students

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Abstract

Study purpose: To investigate the impact of applying the traditional lesson on creative thinking and acquisition of performing some of the football skills among the control group students. To explore the effect of applying the INTUSTEL model on creative thinking and acquisition of performing some of the football skills among the experimental group students. The experimental method was adopted to meet the research requirements.

Materials and methods: The research population consisted of intermediate-stage Mariam Al-Adhraa Secondary School for the academic year (2023-2024) in the district of Al-Hamdaniya. As for the sample, it was limited to students selected randomly through a lottery, totalling (48) female students. A number of sample members were excluded due to their lack of homogeneity. Thus, the research sample became (40) female students for each of the selected divisions. They were randomly distributed into two groups, each group having (20) female students. The experimental group used the INTUSTEL method, and the control group used the traditional method.

Results: The results of the arithmetic average for the experimental sample before and after applying the (INTUSTEL) model in four variables (creative thinking (56.100, 68.500), dribbling (24.262, 19.762), passing (0.050, 16.250), and scoring (6.600, 8.750)) show a significant difference in favouring to the experimental group after applying the INTUSTEL model. That indicated the effectiveness of the INTUSTEL model in physical education, and improvements in the performance levels of the selected skills were observed when applied by the students.

Conclusions: The experimental group that used the INTUSTEL method outperformed the control group that used the traditional method in creative thinking and acquisition of a number of football skills for female students. This improvement results from the student's participation in the educational unit, where they chose the exercises designated by the teacher to develop the selected skills based on their abilities.

Keywords: INTUSTEL, Model, Creative thinking, Questionnaire

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Introduction

The cognitive developments and educational innovations, along with the significant accumulation of human knowledge, have increased the burden on those in charge of the educational process in the need to search for new methods, techniques, and strategies that would develop a critical mindset among students and help them keep pace with these developments. Similarly, the curriculum has increasingly focused on objectives, content, teaching methods, and learning strategies. There has been a notable rise in interest in teaching methods and their approaches, considering them as tools to achieve objectives and solidify content in the learners' minds" (Al-Haik S. K. and Abdel-Rahim, 2022)

Researchers believe learning football skills in sports lessons is crucial at all educational levels (Dilli, Hendra, Priciliya, 2023). Focusing on different educational skills and the diversity of training methods and methods, as this diversity leads to the success of the educational and training process, especially for students interested in football. Among these methods, in addition to traditional methods, is caring for students' physical fitness through periodic health courses that work to improve fitness and push the players' level towards a positive direction. Focusing on individual differences between players, providing appropriate methods for each category, and constantly reviewing competitions and various protocols that work to stimulate their motivation, encourage them, develop and achieve. Using the guided approach in teaching helps in innovation and development. Technology can also be used to support teaching methods or to invent new and organized tactical methods that help develop the skills of student players (Sidikov, 2023). In addition, modern and effective models for the educational process have emerged (Kuswoyo, 2018), including the INTUSTEL model. It is one of the modern models that indicates the link between the quality of learning outcomes and the study method adopted by the student. It is one of the models that emphasizes taking into account the learning styles of all students inside and outside the classroom, as it is based on the relationship between the individual's learning styles and the level of learning outcomes (Ahmed, 2022). This model contains three orientations linked to different motives, which are (the orientation towards personal meaning, which results in the deep approach; the orientation towards re-productivity, which results in the superficial approach; and the orientation towards achievement, which results in the strategic approach) (Al-Mandalawi, 1989).

Hence, the importance of research and the necessity of using this model in creative thinking and mastering the performance of several football skills emerged. As it includes important educational steps. In addition, various educational methods can be used to help convey information more clearly. This prompted the researchers to conduct an experimental study to contribute to developing the educational process and its impact by finding effective means that stimulate female students' thinking. This helps in acquiring, storing and retrieving information more quickly.

Research problem: The need to elevate the level of teaching in schools generally requires the development of various modern methods and models for teaching football skills in physical education classes. It also involves attempting to change how female students think about receiving information. Through the researchers' follow-up in this field, it was noted that female students had a clear weakness in acquiring and learning football skills. They face great difficulty in understanding them, which requires making strenuous efforts using modern and diverse teaching methods and models to solve the problem of learning these skills. Here, the research problem appears in a new attempt to reveal the experimental effect of using the INTUSTEL model in creative thinking and the acquisition of performing some football skills for female students.

Research objectives: To reveal the effect of applying the (INTUSTEL) model on creative thinking and the acquisition of performing some football skills for female students.

Research hypotheses: There is an effect of applying the traditional lesson on creative thinking and acquisition of performing some football skills for the female students in the control group.

There is an effect of applying the (INTUSTEL) model on creative thinking and the acquisition of performing some football skills for female students in the experimental sample.

There are differences between the experimental and control groups in the post-test in terms of creative thinking and acquisition of performing some football skills for female students.

Research fields: Human field: Intermediate school students/Mariam Al-Adhraa Secondary School/Baghdad. Temporal field: 28/2/2024 to 20/8/2024. Spatial field: school sports field.

Definition of terms: The INTUSTEL model: "It is an educational model that emphasizes the existence of three basic orientations for learning strategies, which are (orientation towards personal learning, orientation towards reproduction, and orientation towards achievement. It depends on the relationship between learning methods and their outcomes, and this method results in three educational patterns: deep learning, superficial learning, and strategic." (Putnam, 2014). This approach helps develop students' educational abilities and enhances their cognitive thinking.

Creative thinking is an advanced thinking style that depends on the individual's ability to find solutions to a problem in creative, unconventional ways based on imagination. It is a type of thinking that depends on creating the most significant number of solutions and alternatives, which allows one to see the problem or situation from multiple perspectives and take broad steps to solve it (Mahmoud, 2006). Dribbling: Running with the ball between five markers (Al-Mashhadani, 1999). Passing: Passing from the sideline (Asad, 2007, pp. 141-142). Scoring: Shooting test at a goal divided into scoring zones from a distance of 10 meters (Kamel, 2007).

Materials and methods

Research Methodology

The researchers used the experimental method because it is suitable for the nature of the research and its problem. They designed the experimental and control groups with pre-and post-tests.

To show the extent of homogeneity of the experimental sample and its equivalence with the control sample, the researchers took measurements (age, height, weight) and study variables (Creative thinking, dribbling, passing, scoring). Also, to control external conditions that may affect the results of the study, in addition to the fact that these variables may affect the final results of the study. However, if the sample is homogeneous and equivalent, the final changes are attributed to the independent variable.

Study participants

The research population consisted of intermediate school students from Mariam Al-Adhraa Secondary School for the academic year (2023-2024), numbering (98) students distributed over three classes. The research sample was limited to second-year female students, section (A-B), who were randomly selected, numbering (48) female students. A number of sample members were excluded due to their lack of homogeneity. Thus, the research sample became (40) students for each of the selected sections. They were randomly distributed into two groups, each with its own teaching method Table 1.

Table 1. The sample details

Sections	Group	Method followed	Total No.	Sample No.
A	Experimental	INTUSTEL Model	**25**	20
B	Control	Traditional method by a teacher	23	20

Homogeneity and equivalence:

Table 2. Descriptive statistics indicators for the two research groups and the T values to find homogeneity and equivalence

Variables	Group	Sample	AM	SD	Standard error	Levene's Test		T-test	
						F-value	sig. value	T - value	sig. value
Age	Experimental	20	15.950	0.510	0.114	2.442	0.126	0.839	0.407
	Control	20	15.800	0.615	0.137				
Height	Experimental	20	1.627	0.045	0.010	0.038	0.846	.333	0.191
	Control	20	1.645	0.039	0.008				
Weight	Experimental	20	54.400	3.789	0.847	0.216	0.644	0.723	0.474
	Control	20	53.600	3.185	0.712				
Creative thinking	Experimental	20	56.100	3.024	0.676	0.029	0.866	-0.680	0.501
	Control	20	56.750	3.024	0.676				
Dribbling	Experimental	20	24.262	4.419	0.988	0.972	0.331	0.540	0.592
	Control	20	23.599	3.269	0.731				
Passing	Experimental	20	10.050	2.819	0.630	0.465	0.500	-0.536	0.595
	Control	20	10.500	2.482	0.555				
Scoring	Experimental	20	6.600	1.635	0.366	0.111	0.741	-1.476	0.148
	Control	20	7.400	1.789	0.400				

Table 2 shows that the values of the Levene's Test for Equality of Variances for homogeneity, as indicated by the (f) test, are values greater than the significance level value (0.05). This indicates the validity of the homogeneity of the two samples. The calculated (t) value for all research variables has a significance level greater than (0.05). This confirms the absence of significant differences. This indicates the equivalence of the two research groups in all variables.

Study organization.

Methods of data collection:

Scientific research, Books, References, Questionnaires, Scientific interviews, Tests and measurements.

Defining variables:

Based on a review of scientific references and personal interviews with experts, the researchers proposed the following variables for study in this research: (1) Creative Thinking Scale, (2) Dribbling Skills, (3) Passing Skills, and (4) Scoring Skill. These variables were presented to experts in a questionnaire to obtain their opinions on their suitability. They were accepted by the experts with a consensus rate exceeding 75%. Bloom, George, and Hastings (1983) indicate that the researcher should obtain a consensus rate of 75% or more from expert opinions (Bloom, George, and Hastings, 1983)

Creative thinking scale:

This study utilized the creative thinking scale developed by Mashkoor and Hamdi (2022), which originally consisted of (32) items. Several items were deleted or modified to fit the level of the research sample to become (29) items.

Scale scoring:

The scale includes three response alternatives (Always, Sometimes, Never) with scores assigned as follows: 3, 2, and 1, respectively. Therefore, the maximum score on the scale is (87), and the minimum score is (29).

Pilot Study:

The researchers conducted the pilot study on a sample of (10) second-year female students. The purpose was to ensure the validity of the tests and the scale for the sample's level. An educational unit model was also applied to verify its suitability for the sample.

Scale validity

Face validity:

The researchers presented the scale to experts in sports sciences to assess its validity in measuring creative thinking. The experts agreed on the suitability of the items for measuring the phenomenon. Through this process, face validity for the scale was obtained. Face validity was also relied upon to verify the validity of the skill tests by presenting them to experts who provided their opinions. Additionally, intrinsic validity was confirmed by calculating the square root of the reliability, as will be explained in Table 3.

Internal consistency of the scale:

The scale was applied to a sample of (40) students, and the simple correlation coefficient was calculated between each item's score and the scale's total score.

Table 3. Matrix of correlations between the score of each item of the creative thinking scale and its total score

No.	correlation coefficient	Sig. value	No.	correlation coefficient	Sig. value	No.	correlation coefficient	Sig. value
1	0.524**	0.001	**11**	0.326*	0.040	**21**	0.586**	0.000
2	0.461*	0.003	**12**	0.528**	0.000	**22**	0.558**	0.000
3	0.541**	0.000	**13**	0.376*	0.025	**23**	0.324*	0.041
4	0.326*	0.040	**14**	0.442**	0.004	**24**	0.478**	0.002
5	0.507**	0.001	**15**	0.593**	0.000	**25**	0.515**	0.000
6	0.474**	0.002	**16**	0.580**	0.000	**26**	0.537**	0.000
7	0.694**	0.000	**17**	0.464**	0.003	**27**	0.338*	0.033
8	0.378*	0.026	**18**	0.557**	0.000	**28**	0.531**	0.000
9	0.401*	0.010	**19**	0.552**	0.000	**29**	0.544**	0.000
10	0.538**	0.000	**20**	0.551**	0.000	-	-	-

** Significant at significance level ≤ (0.01), * Significant at significance level ≤ (0.05)

Scale stability

To verify the stability of the scale in measuring the phenomenon, Cronbach's alpha equation was adopted, as the scale stability reached (0.84), which is considered an acceptable

degree for adopting the scale stability. The researchers also used the test-retest method to verify the stability of the selected tests in measuring the attributes they are intended to assess. The skill tests were applied to a sample of 10 students, who were chosen randomly. The tests were reapplied after a time interval of 7 days to the same sample, ensuring that all conditions were as consistent as possible between the two applications. Then, the data was processed using the simple Pearson correlation coefficient to obtain the stability coefficient, and the researchers adopted the value (0.71) to accept the stability coefficient Table 4.

Table 4. The stability and intrinsic validity coefficients of the skill tests.

Test's name	Stability	Intrinsic validity
Dribbling	0.80	0.89
Passing	0.78	0.88
Scoring	0.77	0.87

Field research procedures:

Pre-tests

The experimental and control groups were tested using the selected skill tests, which had been approved by the experts. Additionally, the scale was applied to them after completing its psychometric properties and ensuring its suitability for them.

Implementation of the research experiment:

After completing the pre-test procedures, the main research experiment lasted eight weeks, from March 2024 to May 2024. Each group received two units per week, totalling the number of educational units (24). Each unit had a duration of (45) minutes. The following details describe the experiment:

• Experimental group: This group applied the INTUSTEL model.

• Control group: This group applied the method followed by the teacher. (Traditional method)

Post-tests:

After the model application period on the sample had ended, the post-tests were conducted for both the experimental and control groups.

Statistical analysis.

The statistical package program (SPSS) was used to process the data.

Results

Table 5 illustrates the test results for the control group before and after applying the traditional lesson and presents the results for different variables.

Table 5. AM, SD, and calculated t-value for the scale before and after applying the traditional lesson for the control groups.

Variables	Pre-test		Post-test		Difference test		Calculated (T) value	Sig. value	Sign.
	AM	SD	AM	SD	AM	SD			
Creative thinking	56.750	3.024	59.100	4.141	-2.350	1.725	-6.092	0.000*	Sign.
Dribbling	23.599	3.269	21.834	3.121	1.765	1.077	7.328	0.000*	Sign.
Passing	10.500	2.482	12.150	1.694	-1.650	1.461	-5.051	0.000*	Sign.
Scoring	7.400	1.789	8.350	1.755	-0.950	0.686	-6.190	0.000*	Sign.

*Significant at significance level ≤ (0.05)

Table 6 illustrates the test results before and after applying the INTUSTEL model to the experimental group.

Table 6. AM, SD, and calculated t-value for the scale before and after applying the INTUSTEL model for the experimental group.

Variables	Pre-test		Post-test		Difference test		Calculated (T) value	Sig. value	Sign.
	AM	SD	AM	SD	AM	SD			
Creative thinking	56.100	3.024	68.500	3.720	-12.400	2.010	-27.582	0.000*	Sign.
Dribbling	24.262	4.419	19.762	2.251	4.500	2.911	6.913	0.000*	Sign.
Passing	10.050	2.819	16.250	1.860	-6.200	2.016	-13.755	0.000*	Sign.
Scoring	6.600	1.635	8.750	1.118	-2.150	1.040	-9.245	0.000*	Sign.

*Significant at significance level ≤ (0.05)

Figure 1 presents the results of the differences between the arithmetic means of the pre- and post-tests for the experimental and control groups.

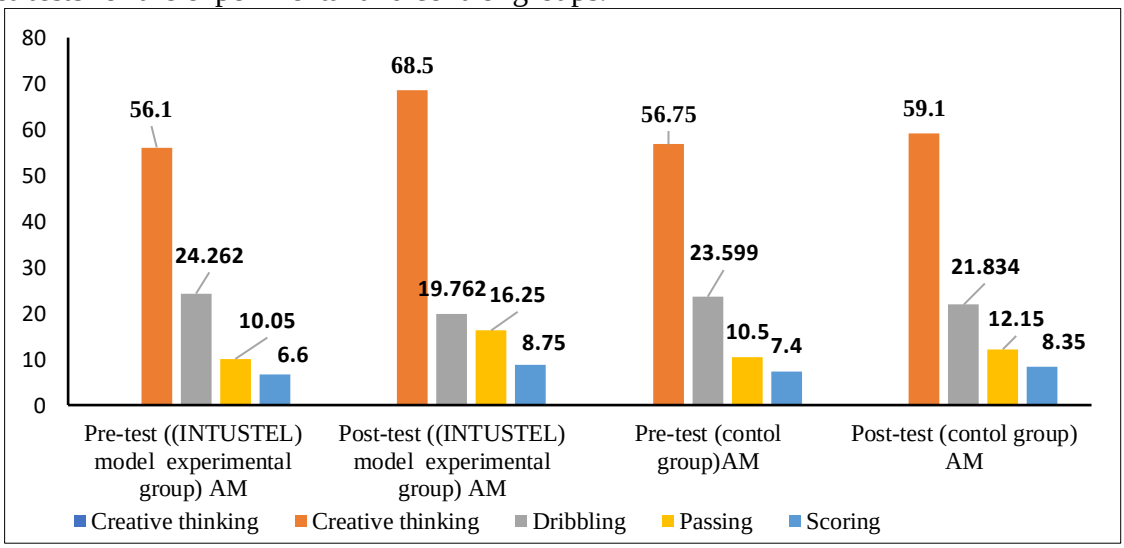

Figure 1. Differences between the arithmetic means of the pre-and post-tests for the experimental and control groups

Presentation of development rates for the scale for the experimental and control groups between pre-tests and post-tests

Figure 2 shows the development rates of the scale and test results for the experimental and control groups between the pre-and post-tests

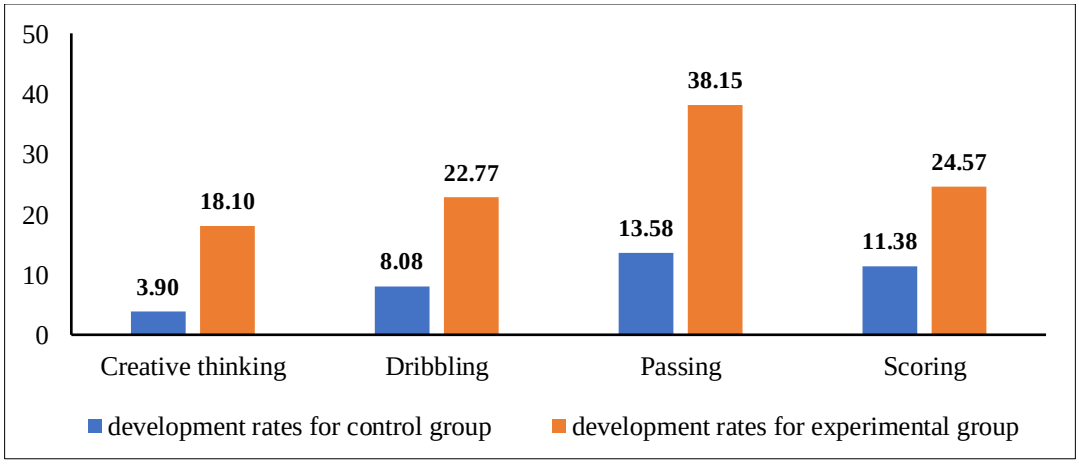

Figure 2. Development rates (%) of the scale and test results for the experimental and control groups between the pre-and post-tests

Table 7 shows statistical values for the scale results in post-tests between the control and experimental research groups:

Table 7. AM, SD, t-value, and f-value for the post-test between the control and experimental research groups.

Variable	Group	Sample	AM	SD	Standard error	Levene's Test		T-test	
						f-value	sig. value	T-value	sig. value
Creative thinking	Experimental	20	68.500	3.720	0.832	0.239	0.628	2.408	0.021*
	Control	20	59.100	4.141	0.926				
Dribbling	Experimental	20	19.762	2.251	0.503	2.100	0.156	7.287	0.000*
	Control	20	21.834	3.121	0.698				
Passing	Experimental	20	16.250	1.860	0.416	0.166	0.686	0.860	0.395*
	Control	20	12.150	1.694	0.379				
Scoring	Experimental	20	8.750	1.118	0.250	3.277	0.078	7.552	0.000*
	Control	20	8.350	1.755	0.393				

*Significant at significance level ≤ (0.05)

Discussion

It is clear from Table 5 that the (Sig.) value of the (t-test) is less than the significance level ≤ (0.05). This indicates a significant difference between the pre-test and post-test results for the control group in favour of the post-test. This improvement results from what the students learned from the regular physical education lesson, which the physical education teacher implemented using her established method. The lesson involved explaining and demonstrating the skill, repeating it in front of the students, and then having them practice it through specific exercises designed by the teacher. This is consistent with what was stated by Saleh and Ibrahim (1994) that, indeed, the improvement observed in students is attributed to the teaching methods used by the teacher, which rely on students' abilities and previous experiences gained from watching television or irregular play, as well as the results are consistent with Lutfi (1972) study results.

The analysis results shown in Table 6 indicate that the differences between the pre-test and post-test are statistically significant when the INTUSTEL model was applied by the teacher with the experimental group in the physical education lesson, favouring the post-test. This demonstrates the effectiveness of the INTUSTEL model in physical education, as evidenced by the observed improvements in the performance levels of the selected skills when applied by the students. This improvement results from the student's participation in the educational unit, where they chose the exercises designated by the teacher to develop the selected skills based on their abilities. This approach deviates from the traditional lesson structure, which relies solely on decisions made by the teacher. Thus, new and varied teaching methods must be used to build and develop students' abilities and knowledge (Al-Dairy and Bataniya, 1987).

Additionally, the teacher's approach, which encouraged active and creative thinking, involved students in the lesson, and assigned extracurricular tasks, made the lesson more engaging. This increased the students' motivation to put more effort into learning and mastering the required skills. Abu Al-Iz, Al-Khraisat, Sawafta, and Qatit (2009) state that the learner should not be passive but engage in various in-class and out-of-class activities. This involves asking students to verbally express the meanings of new information in their own words, based on their individual reference frameworks, and to view new concepts from multiple perspectives. (Abu Al-Iz, Al-Khraisat, Sawafta, and Qatit, 2009)

It also highlights the importance of developing the students' thinking level, making their thinking creative and out of the ordinary. Attia (2010) highlights the importance of the INTUSTEL model through effective learning. He notes that students may have the cognitive potential to achieve high levels of academic performance when their motivation is intrinsic. During learning, students construct a comprehensive understanding of the content and retrieve new information to connect it with their previous knowledge and experiences (Attia, 2010). This also agreements with (Al-Jawharee, 2018)

The INTUSTEL model requires students to face several challenges during the lesson, such as thinking about the questions posed by the physical education teacher and selecting exercises appropriate to their abilities. This process encourages students to think critically and make decisions during the lesson. This contributes to building renewable thinking in the different situations that the student faces. Kamal (2012) confirms this: "The acquisition of creative thinking by individuals is evident in that it enables the individual to organize and control his behavior. A student who can monitor himself is the one who possesses positive internal directions toward the educational process. He is also more capable of solving problems and facing the challenges imposed by educational situations. Self-monitoring can allow the learner to develop his learning methods and acquire better performance competencies by demonstrating greater levels of ability and motivation". (Kamal, 2012).

Based on the results presented in Table 7, we observe that the experimental group, which followed the INTUSTEL model, outperformed the control group, which followed the traditional lesson approach, in the post-test results for the selected variables. This demonstrates the effectiveness of the INTUSTEL model in physical education classes and its impact on the development of student's skills and thinking to a greater extent than the traditional lesson (Naithel & Jawad, 2024). The model encourages breaking away from conventional methods, making the class more engaging and exciting for the students. It also involves decision-making during the lesson, allowing them to express their opinions freely.

This is supported by Al-Mousawi (2005), who stated that "focusing on the learner, making them the center of the educational process, and respecting their opinions and abilities, while surrounding them with compassion, acceptance, and encouragement, is a key factor that facilitates learning" (Al-Mousawi, 2005). Khudair and Hussein (2024) also indicated this in their work (Khudair &Hussein, 2024).

Additionally, the carefully selected and diverse exercises in the lesson were chosen to specifically serve the targeted skills, playing a significant role in the noticeable improvement of the student's performance (Al-Mandalawi, 1989). The students' participation in the lesson also effectively organized their ideas, discussed them with their colleagues, and answered the teacher's questions, reflected in their creative thinking development rate supported by (Abdul Latif, 2002).

Conclusions

In conclusion, the results showed that the INTUSTEL model led to a noticeable and clear improvement in the student's performance and the development of their intellectual and football skills compared to the traditional approach. The superiority of the experimental group that used the INTUSTEL model is evidence of the effectiveness of this model in developing students' creative skills and abilities, helping to organize their participation and increase the discussion style within the classroom. In addition, using this model encourages active and creative thinking and makes the lesson more attractive. Not to mention increasing their motivation to make more effort in learning and mastering the required skills.

Conflict of interest

The authors declare that there are no conflicts of interest.

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