

Effects of flipped learning on kinesthetic response and scoring accuracy in football at indoors stadiums for middle school students according to Susan Model

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ABSTRACT

The study aims to design educational units using reverse learning strategy, prepared by the researcher in advance through video lessons according to Susan's settings for learning patterns and determine their effects on the highest mobility response and scoring accuracy in futsal according to learning patterns. The sample was divided into three sections (visual learning mode, vocal learning mode and motor learning mode), which represent three experimental groups for joint exercises using reverse learning, and continued throughout the implementation of the program (10 weeks) with a total of two units per week after treatment. Statistically (SPSS), the researcher concluded that the use of reverse learning on the research sample, each of which follows its learning method according to the case of Susan, played a major role in determining which of the three best patterns in developing kinetic response speed and scoring accuracy in futsal.

Keywords: Motor learning; Built-learning; Sensory modelling; Futsal.

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INTRODUCTION

The educational process has always been the epicentre of progress of societies, and it is up to the teacher to develop students' potential and teach them skills, and this is done by using modern educational strategies and adding diversification to come up with outstanding educational combination that would instil joy in the hearts of students and keep boredom away and enhance their efficiency in learning. Among the modern strategies that rely on using education technology we have flipped learning strategy, which is a learning environment in which learners reflect what takes place in the classroom with what is required by the teachers in terms of assignments and through preparation in advance of the lesson subject through tutorials published on social media networks, so that the students can check them at home on their smart devices before attending the class (Ali, 2017).

Therefore, flipped learning is one of the strategies that rely on the student use of educational techniques in the learning process, and it increases interaction between the teacher and the students, and between the students themselves. Flipped learning is about digital generation which grew up with lots of software and devices around them and which require a professional teacher who cares about digital research and reading skills, and looks for everything novel and is interested in electronic culture which goes in line with the characteristics of the current generation, thus we can see the important role of flipped learning in optimized investing in electronic education resources, and that understanding how the students learn is an important part of the process of selecting educational strategies. Education is often carried out in traditional ways which ignore the individual differences between students and their learning patterns and using best practices to combine tools and means of technology at the curriculum in an efficient way.

The importance of the research lies in the fact that exercises given to students during the educational units using flipped learning and based on their educational patterns lead to developing their kinaesthetic response, in addition to accuracy of the scoring by the player which leads as well to developing his performance during the games.

Research problem

The researcher, thanks to his experience as a teacher and coach in football schools, is suitable for introducing inverse learning that fits modern technological development by adding joint exercises according to the Susan model of learning patterns, to use them in developing the speed of motor response and scoring accuracy for middle school students in futsal sport.

Research objectives

1. Preparation of combined exercises to develop the speed of kinaesthetic response and accuracy of scoring which is in line with the capacities of the research sample.
2. Preparation of educational units using flipped learning as exercises prepared by the researcher through video tutorials according to Susan's model for educational patterns of the research sample.
3. Identify the effect of educational units using a flipped learning strategy of exercises prepared by the researcher to develop the speed of kinaesthetic response and accuracy of scoring in futsal sport according to the learning patterns of the research sample.

Research assumptions

1. There are statistical differences between results of the pre- and post-tests for all research groups in developing kinaesthetic response and accuracy of scoring in futsal sport.

2. There are differences of statistical nature between results of the post-tests for research groups in developing speed of kinaesthetic response and accuracy of scoring in futsal sport.

Research areas

1. *Human area:* Second grade high school students at Al-Harith High School for Boys for the school year 2018-2019
2. *Timeframe:* Period: from 03/02/2019 to 06/05/2019
3. *Place area:* Sports areas of Al-Harith High School for Boys

RESEARCH METHODOLOGY

The researcher used experimental method to fit it with the nature of the research problem.

The research community and sample

A community and sample of the research were selected on purpose from second grade high school students from Al-Harith High School - Rusafa First Education Directorate of Baghdad (2018-2019).

Total number of the community reached 140 students, split into six educational divisions, and the researcher conducted a knowledge test for three divisions to identify the learning patterns for each student, and in order to guarantee harmony of the sample, students were selected from football indoors stadium players, and with close ages, and within one education phase, and one gender and others than players who play the game in specialized schools and clubs. The researcher unloaded the data of the test distributed to students to identify their learning modes according to Susan model for each division. Afterwards, 10 students were selected for each pattern (visual learning pattern, auditory learning pattern, kinaesthetic learning pattern), and which represent three experimental groups on which combined exercises were performed using flipped learning, and the sample reached 21.42% from the research community.

Devices, tools and aides used:

The researcher used the following tools and means of research:

- Arab and Foreign Resources
- Interviews
- Observation and experiment
- Form for collecting information and unloading information related to the research
- Tests and measurements

RESEARCH FINDINGS

Research procedures

Identification of the study variables and related tests: The researcher selected speed of kinaesthetic response and skill of scoring at football in indoors stadiums as a subsidiary research variable, and identified for each variable a specific test as follows:

1. Test of transitional dynamic response (Al-Hakim, 2004).
2. Scoring at an average distance of 10 meters (Asad, 2011).

Finding scientific factors: Perseverance was found through test and re-test on 10 students from a study group not included in the research sample, and by using Person connectivity factor between both tests. Perseverance for kinaesthetic response variable reached (0.89) and scoring (0.78) and use of extract of

persistence was used to extract the value of self-honesty, and the response variable reached 0.94 and for scoring 0.88.

Pre-tests: conducted on 03/02/2010

Equivalency of the sample: Equivalence values were extracted for the three research groups based on the tests results.

Pre-tests as shown in (Table 1).

Table 1. Analysis of variance to find equivalence between the three groups of research in the variables under study in the pre- tests.

Variables	Resources	Total of squares	Freedom level	Average of squares	Calculated F Value	Significance
Kinaesthetic response	Between groups	0.033	2	0.016	2.49	.101
	Inside groups	0.177	27	0.007		
Scoring	Between groups	22.46	2	11.23	2.15	.136
	Inside groups	141	27	5.22		

Main experiment

Starting the application of the main experiment on 4/2/2019 for the experimental groups, and it included 20 educational units with two educational units per week and a time of (40) minutes with confirmation that the explanation of exercises in the educational part of the main section will be according to the learning style of each group as well as correcting errors in the applied part of the main section will also be in the same pattern. The chronological distribution of the proposed curriculum follows:

- Number of weeks (10).
- The number of educational units per week (2) = (20) educational units.
- The time of the educational unit is (40) minutes.
- The total time for teaching units is $40 \times 20 = 800$ minutes

1. The preparatory department has a total time of (200) minutes, at a rate of (10) minutes per unit of education.
2. The main section has a total time of (500) minutes at a rate of (25) minutes per unit of education.
3. The closing section has a total time of (100) minutes at a rate of (5) minutes per educational unit.

Post-tests: The post-tests of the research sample were conducted on 4/22/2019. *2-9 Statistical methods:* The researcher used the pouch system SPSS when processing all data of the research sample.

DISCUSSION

Presenting, analysing and discussing the results.

Present the results of the pre- and post-tests of the three groups, analyse and discuss them.

Through our observation of (Table 2) of the experimental groups that worked with flipped learning in addition to the combined exercises according to Susan model, it was found that the variables of kinaesthetic response and

the scoring accuracy that the study was interested in have recorded significant differences in favour of the post-tests and this indicates that the effectiveness of flipped learning and the combined exercises that the researcher prepared, designed and included in flipped learning strategy for the sample members of the three groups in addition to what they learn within the lesson for the same combined exercises "that teach the student through flipped learning strategy the new concepts of the lesson at home through modern technologies such as smart phones or mobile computing devices such as the iPad so the student can replay the video several times and absorb new concepts (Al-Zine, 2015).

Table 2. Shows the mean values, standard deviation, and (T) test values for pre- and post-tests for the search variables of the experimental totals.

Groups	Study variables	Pre-exam		Post-exam		Mean differences	SD difference	Tabulated T value	Significance
		Mean-	±SD	Mean-	±SD				
Visual	Kinaesthetic response	1.87	0.72	1.17	0.116	0.69	0.137	16.04	.000
	Scoring	9.30	2.54	14	2.90	- 4.7	1.7	-8.72-	.000
Auditory	Kinaesthetic response	1.87	0.07	1.3	0.1	0.56	0.14	12.18	.000
	Scoring	10.1	2.64	14	2.9	- 3.9	1.1	-11.2-	.000
Kinaesthetic	Kinaesthetic response	1.94	0.09	1.67	0.09	0.27	0.11	7.7	.000
	Scoring	8	1.49	14	2.74	- 6	1.49	-12.72-	.000

Note: SD: Standard deviation.

In the kinaesthetic response variable, we notice that the flipped visual and auditory results were better than the flipped kinematic, and the reason for this according to the researcher attributes is one of the components of the harmonic capabilities, which depends in its integration on the development of the kinaesthetic capabilities in which the nervous system (central and peripheral) are dominant and controlling in the performance of these capabilities, compatibility and harmonious muscular synergy necessary to master different kinaesthetic skills (Attiya, 2014).

The senses of sight and hearing are among the most important inputs of stimuli in the environment to the nervous system to start mental processes to process and program these stimuli and thus get a better performance of the required movement. "Mental processes go through stages starting from entering the central nervous system and then identifying them and searching in the memory for information related to them, then the interaction between what is in the memory and the new stimulus takes place, and the result of this interaction is decision-making through sensory signals from the central nervous system to the peripheral nervous system and then to the muscles required to work" (Khayoun, 2010). his is what flipped learning provided to the members of the sample of the first and second groups, while flipped learning is based on reducing the images and explanation at the expense of the kinaesthetic performance of the skill, "the educational activities favoured by those of flipped

kinaesthetic are the animated stories that are supported by movement or animated forms, role-playing, representation of positions in motion, displaying games in motion" (Attiya, 2016).

while the scoring variable stimuli recorded a better kinaesthetic reversal group than the first and second groups, the researcher finds the reason for this in the fact that the performance of skills depends mainly on kinaesthetic performance and that the failure of passes is due to the fact that it was very close to the results of the first and second groups and that of the difference between them was slight.

Presentation, analysis and discussion of post- tests for the three groups.

Table 3. The analysis of variance, the calculated value (F) and the significance of the differences in the dimensional tests of the six research groups are shown in all the variables under study.

Variables	Resources	Total of squares	Freedom level	Average of squares	Value calculated F	Sig
Kinaesthetic response	Between groups	1.3	2	0.65	56.2	.000
	Inside groups	0.31	27	0.012		
Scoring	Between groups	0.00	2	0.00	0.000	1
	Inside groups	220	27	8.14		

To find out which of these experimental groups was better in the results of the dimensional tests of the kinaesthetic response variable, the researcher used (Tukey B^a) law to find the least significant difference between the research groups and thus know which group was better as in (Table 3).

Table 4. Indicates the ranks of the experimental groups according to preference as per Tukey Ba's law.

Significance level = .05%			N	Groups	Kinaesthetic response
3	2	1			Tukey B ^a
		1.179	10	First (Flipped visual)	
	1.309		10	Second (Flipped auditory)	
1.671			10	Third (Flipped kinetic)	

From (Table 4) it was found that the visual style group is the best, followed by the auditory style group at the second rank, whereas the kinetic style group came in the last rank, and thus the two research hypotheses have been achieved except for the part of scoring accuracy from the second hypothesis.

CONCLUSION

It was found that the combined skill exercises designed by the researcher had a great influence in developing the speed of kinaesthetic response and scoring accuracy for the members of the research sample. It turned out that the use of flipped learning on the members of the research sample, each according to his learning style according to Susan model of patterns, had a great role in knowing which of the three patterns is the best for developing the speed of the kinaesthetic response and the accuracy of scoring in football in indoors stadiums. Those with visual style achieved the best results in developing the kinaesthetic response speed, followed by the auditory pattern group and finally the motor style group. It was found that whenever the exercises applied to the research groups simulate as much as possible conditions similar to what the learner

is going through in real competition, such as under time pressure, it was very effective in bringing about developments in the levels of response speed and accuracy of scoring. The organization of work within the main section of the educational units of the research sample in the form of stations had a great impact on the development events of all research variables.

RECOMMENDATIONS

Adopting the results of this study and making use of it in developing the curriculum for football in indoors stadiums for middle school students, which is developed by the Ministry of Education.

Benefiting from the results of the study using the proposed educational curriculum under research - to improve learning basic football skills for football in indoors stadiums as well as to improve the level of student skill performance.

Focus on the use of visual and verbal feedback in learning for middle school students.

Conducting research and studies that depend on the introduction of flipped learning according to the system of brain dominance for different samples and on other subsidiary variables, whether in the sport of football in indoors stadiums or other sports.

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