

## **Effect of using some web 2.0 application on developing cognitive achievement for table tennis back spin serve for fourth grade students (education division ) and their attitude towards it**

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### **Introduction**

Education Faces a big Challenges as a result of information and communicative techniques development. Web appears as an important resource of information because of its easy use, accessibility; students use it as one of the important educational channels and recently it has developed from means of information publishing depend on individual relationships between users and the net as in Web 1.0 for example e-learning, seminars to a kind of electronic social participations as in (Web 2.0) application, as a new trend to use Web technology in designing electronic sites which aim at increasing creativity, information exchange, enforcing cooperation between internet users to build electronic societies.( Alfar, 2013, p44)

Using Web 2.0 applications is of best developments in knowledge decentralization. It enables students to send, interact and participate in organizing the content and not only negative receivers. It also make learning cooperative and integrating, Web is a not only a reading place, it is read and write area. Web increases students' ambitions and encourages them to participate in teaching and learning in strongest manner. (O'REILLY, 2007, p. 18 and Malhiwsky, 2010, p26)

Within Web 2.0 application is Online Social Networks which defined as group of Network websites emerged with Web 2.0 allow individuals communication in virtual society assembling them in groups according to their interests like (country, university or school ) all these through online direct communication services like

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sending messages or reading others' personal data files (Lamberson, 2010, p. 2).

It also defined as defined them as "Easy to use technologies used as teaching method that permits its users to practice many activities like adding personal versions, share pictures and videos, add post, communicate with peers and create personal group" (Klopfer et al, 2009, p.10)

Researcher in the opinion that Web Social Networks are web 2.0 applications could be used in educational purposes, by making the educational content available in all possible forms, it allows students and teachers participating in developing or amending the content, provide activities, express opinions, share pictures and videos, add posts, communicate with peers and also create personal groups. Mazman and Usluel study (2010) results mentioned three educational usages of Facebook namely: communication, cooperation and content share.

Web Social Networks have many educational advantages, it has easy access interactive interfaces allow their users interactive and cooperative

content management in social frame keeps social and human relationships among them (Alhalafawy, 2011, p. 43). Students communication allow them to be updated with the newest about curricula, exam results. These sites allow instant feedback from other students and teacher and enable students to ask questions and receive instant answers (Davis, 2010).

Many scientific conferences, e.g. E-Learning and Distance Learning Third International Conference (2013), Arab society for Education Technology, seventh scientific conference (2011), recommended necessity of using Web Social Networks like (Facebook), (Blogs), (Wiki), Content Tagging effectively to achieve educational goals.

This calls many researchers to conduct studies in this area which proved that using Web Social Networks in all its forms is effective in promoting students cognitive achievement in different educational stages (Kurt, Izmirli, & Sahin-Izmirli, 2011 and Junco, Heiberger, & Loken, 2010)

Facebook is the most important and spreading Web Social Network, since (2005) its users increased greatly, A scientific study revealed that (85%) of world students use Facebook and that (38%) of Facebook users are Americans, Canada comes in second rank, Great Britain and then Egypt (Alfar, 2013, p 204).

Using Facebook as educational tool eases and improves learning and information transformation process, rises students' achievement because of providing individual learning methods and using all students' senses, the matter makes the user more interactive with educational environment that depend on innovative methods help to develop students' cognitive systems and makes them more able to grasp informations (Alhalafawy, 2009, p111 and Redecker, Ala-Mutka, Bacigalupo, Ferrari, & Punie, 2009, p 42). This was confirmed by Junco (2012), Brandtzæg, Lüders, & Skjetne, 2010 and Patrício & Gonçalves (2010) study results.

The researcher as table tennis lecturer at faculty of physical Education noticed students strong use of some web 2.0

applications as facebook and twitter, so she questionaired a sample of (32) fourth grade (Education Division) students at faculty of physical education with one question about web 2.0 social networks application preferences. results revealed that 80.8% from students have accounts on facebook, and subscribed in groups aiming at communicating and exchange information about educational field training, different syllabuses tasks and missions, therefore researcher has chosen facebook as the application used in this study. As far as researcher knows, there is no study interested in its effectiveness in developing cognitive achievement in table tennis or in field of physical education. from what mentioned above this study idea emerged to benefit from students' passion to use these applications in educational field.

### **Research objective:**

This research aims at identify the effect of using some web 2.0 application on developing cognitive achievement for table tennis back spin serve for fourth grade students (education

division) and their attitude towards it

### **Research Hypotheses:**

1- There are statistically significant differences between experimental group pre and post tests for cognitive achievement for the table tennis back spin serve.

2- There are statistically significant differences between experimental and control groups pre and post tests for cognitive achievement for the table tennis back spin serve.

3- Students attitudes towards using some web 2.0 application in learning table tennis back spin serve are mostly positive

4- There is correlation between cognitive achievement and student attitudes towards using some web 2.0 application in learning table tennis back spin serve.

### **Research Terms**

#### **Web 2.0 Applications**

Web hosted applications like Facebook which used to interact with educational content for (tabletennis back spin serve skill) in easy way and in a form meets students needs to use these applications in the educational process (procedural definition).

#### **Cognitive achievement**

The knowledge and information acquired by fourth grade (Education Division) students after they studied table tennis back spin serve using e-book (prepared by researcher), evaluated by marks achieved in the cognitive test prepared by the researcher (procedural definition).

#### **Attitude:**

Students opinion about using Web 2.0 application like facebook whether accepting or refusing, measured by attitude scale prepared by researcher (procedural definition )

#### **Research procedures:**

#### **Research Methodology :**

The researcher used the quasi experimental methodology as it suits research nature using the experimental design with two group (control and experimental).

#### **Research Sample:**

Research sample consisted of (55) fourth grade students (education division) in the academic year (2015/2016) after excluding players, injured and absent students. Sample divided to (24) students experimental group, who can use vcpmouters and have facebook and google accounts, (26) students as control group, in addition to (32)

students from fourth grade students in the academic year (2014/2015) as pilot study sample.

## Experimental and control groups homogeneity

Table(1)

### Experimental and control groups homogeneity before experiment

Statistics Variables	Experimental group (n=24)		Control group (n=26)		T value
	Mean	SD	Mean	SD	
age	21.192	0.658	21.282	0.491	0.098
Intelligence	26.500	1.794	27.538	2.024	1.913
Cognitive test	9.042	3.000	8.192	2.593	1.074

T significant at 0.05 and 48 DOF = 2.011

Table (1) revealed that differences between experimental and control groups are not statistically significant, the matter indicates groups homogeneity in age, intelligence and cognitive test results before experiment.

#### Research tools:

- 1- Cognitive Achievement test - prepared by researcher (appendix 1)
- 2- IQ test for adults - Samia Al-Ansary. (appendix 6)
- 3- Attitude scale to web 2.0 applications - prepared by researcher (appendix 3)

#### Main study:

Main study implemented in the period from 21/9/2015 to 2/11/2015 as follows:

#### Pre measurement

- Pre-measurement conducted for experimental and control groups in the period from 21/9 to 23/9/2015) in:

- 1- Cognitive achievement test of back spin serve skill after giving a general idea about the skill.
- 2- IQ Adults tests - Samia Al Ansary .

#### Program implementation :

The program prepared by the researcher implemented in the period from 28/9 to 26/10/2015 after explaining web 2.0 application and train experimental group students in using it and facebook in educational process and managing the theoretical lecturer.

- For experimental group the theoretical lecturer was only through face book (it was

uploaded one day before lecturer scheduled day (Sunday) on the website prepared by the reseacher using E-learning Moodle system to the site (<http://www.doctorbasma.com>). Descussions between students themsleves or with lecturer were through Tabletennis facebook group created for this study purpose during Monday scheduled time, some assgnments were given by the lecturere to be completed by Tuesday 7.00 pm.

- Control group taught using the traditional method by the reseacher weekly on moneday.
- Program implementation time were 5 weeks , one lecturer/week, ecah lecturer is one houre time for both groups.

**Post measurement**

- Post-measurement conducted for experimental and control groups in the period from 2/11 to 4/11/2015) in:

- 1- Cognitive achievement test of back spin serve skill after giving a general idea about the skill (for both groups).
- 2- Attitude scale (for experimental group only).

**Results and discussions**

1- To verify first hypothesis "There are statistically significant differens between experimental group pre and post tests for cognitive achievement for the table tennis back spin serve.", researcher calculated "T" value and Cohen effect size as demonstrated in table 2.

**Table(2)  
Differences significance between experimental group pre-and-post measurements in cognitive test**

Group	Cognitive test				T value	Cohen's d Effect size
	Pre mesurement		Post mesurement			
	Mean	SD	Mean	SD		
Experimental Group (N=24)	9.042	3.000	18.958	1.654	14.567*	2.97

\*Statistically significant at 0.05(T. significant at 0.05 23 DOF= 2.069) Effect size: low (0.2 - < 0.5), Medium (0.5- <0.8) high (0.8 and greater) (Lakens, 2013, p. 3).

Table (2) results reveal statistically significant differences between experimental group cognitive achievement pre and post tests with high effect size (greater than 0.8) in favor of post test, this may be to use some Web 2.0 applications as educational tools which help in learning process and information transfer by individual learning styles that allow more interaction with educational environment which provide teachers and learners with easy to use tools like content share, instant messages , picture and videos share, profile updates by adding informaton , or picturers related to scientific

content shared between them; that encourages scientific progress. This is in agreement with Brandtzæg, Lüders, & Skjetne (2010), Wang, & Woo. (2010) study results which revealed that these reasons lead to social networking (facebook) success in education .

2- To verify second hypothesis "There are statistically significant differencs between experimental and control groups pre and post tests for cognitive achievement for the table tennis back spin serve.", researcher calculated "T" value and Cohen effect size as demonstrated in table 3.

**Table(3)**  
**Differences significance between experimental and control group post measurements in cognitive test**

Statistics Variables	Experimental group (n=24)		Control group (n=26)		T value	Cohen's d Effect ssize
	Mean	SD	Mean	SD		
Cognitive test	18.958	1.654	12.769	2.438	10.414*	۳.۳۳

\*Statistically significant at 0.05(T. significant at 0.05 48 DOF= 2.011) Effect size: low (0.2 - < 0.5), Medium (0.5- <0.8) high (0.8 and greater) (Lakens, 2013, p. 3).

Table (3) results reveal statistically significant differences between experimental and control groups cognitive achievement

post tests with high effect size (greater than 0.8) in favor of experimental group. This difference may be explained as follows:

1- Web 2.0 applications overcome students' boring , as voice, pictures, video clips introduce purposeful, interesting, and exciting learning environment, this will increase students desire to learn and achievement. This results in agreement with Reynol (2011) study results which confirmed positive correlation between study duration in Web and content cognitive achievement.

2- The program prepared using Web 2.0 application provide syllabus general objectives,procedural behavioral objectives that can be observed and measured , which students should fulfill in each lesson .

3- Web 2.0 applications provide different ways to offer the educational content, which ensure students positive and effective role in acquiring

knowledg and link it with previous information and discuss it with their colleagues.

4- Web 2.0 applications give students chance to get deeper in understanding understudy subjects, with wide and deep manner. This help students to improve their knowledge level.

5- Web 2.0 applications provide instant feedback, which help students to instantly correct their cognitive path during study.

These results are in agreement with Couillard. (2009), and Randtzæg, Lüders, & Skjetne (2010) study results.

3- To verify third hypothesis "Students attitudes towards using some web 2.0 application in elarning table tennis back spin serve are mostly positive", researcher used chi square test as demonstrated in table 4.

**Table (4)**  
**Research sample responses on attitudes scale (n=24)**

Phrase No	Phrase type	Agree		Do Not know		Disagree		Approval %	Response direction	Chi Square	
		Freq.	%	Freq.	%	Freq.	%				
1.	Negative	13	54.17	8	33.33	3	12.5	29.17	Disagree	positive	6.250*
2.	Positive	16	66.67	2	8.33	6	25	70.83	Agree	positive	13.000*
3.	Negative	12	50	9	37.5	3	12.5	31.25	Disagree	positive	5.250
4.	Positive	17	70.83	0	0	7	29.17	70.83	Agree	positive	18.250*
5.	Negative	11	45.83	11	45.83	2	8.33	31.25	Disagree	positive	6.750*
6.	Positive	10	41.67	13	54.17	1	4.17	68.75	Agree	positive	9.750*
7.	Positive	15	62.5	4	16.67	5	20.83	70.83	Agree	positive	9.250*
8.	Positive	13	54.17	7	29.17	4	16.67	68.75	Agree	positive	5.250



**Follow Table (4)**  
**Research sample responses on attitudes scale (n=24)**

Phrase No	Phrase type	Agree		Do Not know		Disagree		Approval %	Response direction		Chi Square
		Freq.	%	Freq.	%	Freq.	%				
9.	Positive	8	33.33	7	29.17	9	37.5	47.92	Do not know	Neutral	0.250
10.	Negative	12	50	10	41.67	2	8.33	29.17	Disagree	positive	7.000*
11.	Negative	11	45.83	12	50	1	4.17	29.17	Disagree	positive	9.250*
12.	Positive	15	62.5	6	25	3	12.5	75	Agree	positive	9.750*
13.	Negative	9	37.5	15	62.5	0	0	31.25	Disagree	positive	14.250*
14.	Negative	16	66.67	2	8.33	6	25	29.17	Disagree	positive	13.000*
15.	Positive	14	58.33	7	29.17	3	12.5	72.92	Agree	positive	7.750*
16.	Positive	17	70.83	3	12.5	4	16.67	77.08	Agree	positive	15.250*
17.	Positive	13	54.17	8	33.33	3	12.5	70.83	Agree	positive	6.250*
18.	Positive	12	50	6	25	6	25	62.5	Do not know	Neutral	3.000
19.	Positive	8	33.33	8	33.33	8	33.33	50	Do not know	Neutral	0.000
20.	Negative	8	33.33	7	29.17	9	37.5	52.08	Do not know	Neutral	0.250
21.	Negative	8	33.33	9	37.5	7	29.17	47.92	Do not know	Neutral	0.250
22.	Positive	13	54.17	7	29.17	4	16.67	68.75	Agree	positive	5.250
23.	Negative	11	45.83	11	45.83	2	8.33	31.25	Disagree	positive	6.750*
24.	Positive	14	58.33	5	20.83	5	20.83	68.75	Agree	positive	6.750*
25.	Positive	15	62.5	7	29.17	2	8.33	77.08	Agree	positive	10.750*
26.	Negative	16	66.67	6	25	2	8.33	20.83	Disagree	positive	13.000*
27.	Positive	10	41.67	6	25	8	33.33	54.17	Do not know	Neutral	1.000
28.	Negative	10	41.67	8	33.33	6	25	41.67	Do not know	Neutral	1.000
29.	Positive	19	79.17	2	8.33	3	12.5	83.33	Agree	positive	22.750*
30.	Negative	15	62.5	5	20.83	4	16.67	27.08	Disagree	positive	9.250*

\*Statistically significant at 0.05(Chi square significant =5.991)

Response direction: Disagree (0-33.33%) Do not know (33.34-66.66%) Agree (>66.66%)

Table (4) results reveal the following:

1- Research sample responses are statistically significant in positive direction in positive phrases (2, 4, 6, 7, 12, 15, 16, 17, 24, 25, 29), and

in negative phrases (1, 5, 10, 11, 13, 14, 23, 26, 30) (twenty phrases represent 66.67% of total phrases).

2- Research sample responses are in positive direction but not statistically significant in the positive phrases (8, 22) and in negative phrase (3) (three phrases represent 10% of total phrases)

3- Research sample responses are in neutral direction and not statistically significant in the positive phrases (9, 18, 19, 27) and in negative phrases (20, 21, 28) (seven phrases represent 33.33% of total phrases)

All these declare that sample responses on attitude scale are mostly positive.

These results could be explained as following:

1- Web 2.0 applications coincide with students' wishes in using new learning methods, which encourages them to study, and increase their positive attitudes to use it in learning. Fahmy & Abdel Sabour (2001) argue that emotional side can't be developed through reading or listening to its advantages, but it is important to give many opportunities for students to practise it, and to form emotions and sympathies around it, all that make students like it, believe in it and be keen on it .

2- Web 2.0 applications is an encouraged method to students which increase their motives towards completing the activities which offered through it, hence it affects their

attitudes towards using it in learning.

3- Web 2.0 application ensure communicative and interactive educational environment between students with full co-operation, and objective discussion between them, this will improve their attitudes towards using these applications and interact with it.

4- Web 2.0 application give the chance to bravely learn without shame or fear, the matter which will aid students to achieve and progress, hence enforce their trends towards using it in learning .

These results are in agreement with Hossain & Quinn (2013), Kurt, Izmirli, & Sahin-Izmirli (2011), Junco, Heiberger, & Loken (2010), Hoffman (2009) study results.

4- To verify fourth hypothesis " **There is correlation between cognitive achievement and student attitudes towards using some web 2.0 application in larning table tennis back spin serve**", researcher used Pearson (r) correlation coefficient test as demonstrated in table 5.

**Table (5)**  
**Correlation coefficient between cognitive test and attitudes scale**  
**for experimental group (n=24)**

Cognitive test		Attitudes scale		Correlation coefficient (r)
Mean	SD	Mean	SD	
18.958	1.654	47.028	4.393	0.548*

\*Statistically significant at 0.05 (r significant at 0.05 and 22 DOF = 0.404)

Table (5) results reveal statistically significant positive correlation between the results cognitive test results and attitudes scale.

The results of table (5) could be explained as follows

1- students' positive attitude towards using Web 2.0 applications makes them more willing to learn, and that will increase their cognitive achievement. This is in agreement with Alhalafawy (2012) opinion that education using web 2.0 applications is an innovated method suitable for students' needs in this age as it has a great effect in increasing their achievement.

2- Using web 2.0 applications encourage students to discuss their opinions even they have no relationships, and benefit from different opinions will make them more acceptable to educational content (Jovanovic, Chiong, & Weise, 2012).

3- Facebook is predominated by youth character, and that will make it suitable for students research sample, it will also enforce their relation with educational content and positively affects their cognitive achievement.

### **Conclusions:**

According to research goals, its hypotheses and its results, the following is concluded

1- Experimental group which used Web 2.0 application excels control group that used traditional educational method (Explanation, demonstration and book ) in cognitive achievement (cognitive test) for table tennis syllabus.

2- Using some Web 2.0 applications in education contributes to develop positive attitude within research sample individuals, and increases student motivation and

effectiveness towards using it in table tennis learning.

3- There is positive correlation between cognitive achievement and attitude towards using some Web 2.0 applications in studying syllabus content.

### **Recommendations:**

In light of research results, the following is recommended:

1- Using some Web 2.0 applications in teaching table tennis syllabus for second grade due to its positive effect appeared in this study.

2- Using some Web 2.0 applications in teaching other syllabuses

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