

\*

(27)

(10)

(101)

(%90,70)

(1993 )

.Fiber-Optics

Reproductive Biology

(May, 2001)

(Lysaghta, Philip and Kerridgea, 2006)

(Hurd, 2001)

.2010/9/20

2010/1/27

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.(2003

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.(2008

.(2005 )

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.(Peters, Ono, Shimizu and Koji, 1997)

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.(2005

.(De Lange, 2005)

(1993 )

2005 )

.(2008

.(2005 )

.(2005 )

.(2005 )

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-2

.(Nozick, 1974)

-3

.(1997 )

(  
-4

.(2000 )

(1970) Van Rensselaer Potter

.(2005 )

: .(Bryant and Baggott, 2003)

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: (Van

).(Rooy and Pollard, 2002

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).(2001 )

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).(Asada and Tsuzuki, 1996)

(Nelson, 2008)

).(2005 )

).(Chowning, 2005)

:

(15)

(%90)

(Dawson, 1996)

Rooy, 1999 (Van)

(1992

(204)

(Lundmark, 2002)

(Asada and Tsuzuki, 1996)

(Steele and Aubusson, 2004)

(100)

(35)

Roy and )

(Van Pollard, 2002

Macquarie

(2005 )

(Bryant and Baggott, 2003)

Exeter

(Lysaghta et al, 2006)

(19)

(375)

( 95,2)

		2008)		( 67,8)
	(111)			
Brigham		(34)		
			Itai, )	(2006
		(107)	(%61,5)	
(Markowitz et 2003		al, 2008)		
	.(NHGRI) National Human Genome Research Institute			
Rochester				
			(2008)	
(PBL) Problem-Based Learning				
				(40)
	PBL		(%33,8)	
			(%30,4)	
	PBL		(%9,2)	(%19,6)
			(%7,0)	

(Hanegan et al,

5 )  
( 10 10-5

:  
( )

(113) ( )

(101)  
(%84)  
(1)

:

.1

38	17	21	5
27	11	16	10 - 5
36	23	13	10
101	51	50	

:

" : 2005 1987 )

.(2005

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)  
(

Pearson (test-retest)  
(2) (18)

.2

0,85	0,82	0,78	0,85	0,89	0,92	
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(SPSS) (✓)  
.1

.2

( )

(T-test) " "

.3

.%95

.(One-Way ANOVA)

.4

( ) - ( )

5

10

10 - 5

:

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:

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(

.(3)

.3

%45,5	460		1
%17,3	175		2
%16,1	163		3
%12,4	125		4
%8,6	87		5
%100,0	1010		

(3)

- (2005 )

.(2001 )

(%16,1)

.(%45,5)

(Van Rooy, 2000)

(%12,4)

(%8,6)

(%17,3)

(Itai, 2006)

)

(2005

(2005 )  
(1992 )

:

:

(2008)

( )

(t-test) " "

(4)

" " .4

0,049	1,998	1,76	4,14	50		-1
		2,75	5,06	51		
0,834	0,210	1,03	1,72	50		-2
		1,11	1,76	51		
0,648	0,458	0,91	1,58	50		-3
		0,99	1,67	51		
0,027	2,241	1,17	1,48	50		-4
		0,88	1,02	51		
0,021	2,355	0,94	1,08	50		-5
		0,82	0,67	51		

(4)

:  
 " :  
 " :  
 10 - 5 5 )  
 ( 10  
 .(5)  
 (5)

10 10 - 5 5 ) (2008 ) (2005 )  
 ( )  
 (One-Way ANOVA)  
 .(6)  
 ( )  
 .5

<b>10 (36)</b>		<b>10 - 5 (27)</b>		<b>5 (38)</b>		
1,50	4,61	2,04	3,81	3,01	5,16	-1
1,07	1,67	1,14	2,00	1,00	1,63	-2
0,91	1,47	0,99	1,85	0,95	1,61	-3
0,94	1,42	1,27	1,19	0,99	1,13	-4
0,93	0,78	0,86	1,15	0,88	0,76	-5

...

.6

0,074	2,675	14,238	2	28.476		-1
		5,323	98	521,682		
0,340	1,090	1,232	2	2,465		-2
		1,131	98	110,842		
0,289	1,257	1,122	2	2,244		-3
		0,892	98	87,459		
0,480	0,739	0,823	2	1,646		-4
		1,114	98	109,166		
0,176	1,766	1,414	2	2,829		-5
		0,801	98	78,498		

(6)

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.(2006

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"

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"

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.(7)

.7

%90,70	916		1
%7,42	75		2
%1,88	19		3
%100	1010		

(Chowning, 2005) . (%90,70) (7)

(%7,42)

Steele . (%1,88)

(and Aubusson, 2004) (%90,70)

(%1,88)

(

(Asada and Tsuzuki, (%90) 1996)

(Lysaghta et al, (2006, ( 95,2)

(%7,42)

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:

(8) (10)

(8)

...

(%52,73) :  
(%22,24)  
(%9,68)  
(%5,90)  
(%2,67)  
(%2,00)  
(%1,67)  
(%1,56)  
(%1,33)  
(%0,22)

.8

%52,73	474		1
%22,24	200		2
%9,68	87		3
%5,90	53		4
%2,67	24		5
%2,00	18		6
%1,67	15		7
%1,56	14		8
%1,33	12		9
%0,22	2		10
%100,00	899		

(Asada and Tsuzuki, 1996)

(Hanegan et al., 2008)

(Dawson, 1996)

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(4) 22

: (1215-1095 : )

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[http://www.asharqalawsat.com/leader.asp?](http://www.asharqalawsat.com/leader.asp?section=3&article=474227&issueno=10786) 10786

section =3&article=474227&issueno=10786

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1987

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2005 . .

: (174-165: )

: 2000

2008

- Bioethics. *Bioscience*, 52 (10), 881.
- Lysaghta, Tamra. Rosenberger, Philip J. and Kerridgea, Ian. 2006. Australian Undergraduate Biotechnology Student Attitudes towards the Teaching of Ethics. *International Journal of Science Education*, 28, (10, 18), 1225–1239.
- Markowitz, Dina. Dupré, Michael J. Holt, Susan. Chen, Shaw-Ree and Wischnowski, Michael. 2008. BEGIN Partnership: Using Problem-Based Learning To Teach Genetics & Bioethics. *American Biology Teacher*, 70 (7), 421-425.
- May, T. 2001. The Breath Of Bioethics: Core Areas Of Bioethics Education For Hospital Ethics Committees. *Journal of Medicine and Philosophy*, 26 (1), 101-118.
- Nelson, Genevieve M. 2008. Teaching Bioethics. <http://www.accessexcellence.org/LC/TL/TBE/index.php>
- Nozick, R. 1974. *Anarchy, State, and Utopia*. New York: Basic Books.
- Peters, Malte. Ono, Yumiko. Shimizu, Koji. Hesse, Manfred. 1997. Selected Bioethical Issues in Japanese and German Textbooks of Biology for Lower Secondary Schools. *Journal of Moral Education*, 26(4), 473-490.
- Steele, F. and Aubusson, P. 2004. The Challenge in Teaching Biotechnology. *Research in Science Education*, 34 (4), 365-387.
- Van Rooy, Wilhelmina and Pollard, Irina. 2002. Teaching and Learning About Bioscience Ethics With Undergraduates. *Education For Health*, 15(3), 381-385.
- Van Rooy, Wilhelmina S. 1999. Controversial Biological Issues: An Exploratory Tool for Accessing Teacher Thinking in Relation to Classroom Practice. Paper presented at the Annual Meeting of the National Association for Research in Science Teaching, 72nd, Boston, MA, March, 1999, 28-31.
- Van Rooy, Wilhelmina. 2000. Controversial Issues within Biology: Enriching Biology Teaching. *Australian Science Teachers' Journal*.
- Asada, Y. and Tsuzuki, M. 1996. High school teaching of bioethics in New Zealand, Australia and Japan. *Journal of Moral Education*, 25 (4), 401-421.
- Boohar, Richard K. 2003. Training Future Ethical Leaders of Science. *Bioscience*, 53 (8), 692-694.
- Bryant, John. Baggott, la and Velle, Linda. 2003. A bioethics course for biology and science education students. *Journal of Biological Education*, 37 (2), 91-96.
- Chowning, Jeanne Ting. 2005. How To Have A Successful Science And Ethics Discussion. *The Science Teacher*, 72 (9), 46-50.
- Dawson, Vaille. 1996. A constructivist approach to teaching transplantation technology in science. *Australian Science Teachers Journal*, 42 (4), 15-21.
- de Lange, M. C. 2005. Integrating philosophical and bio-ethical perspectives in life sciences facilitator education. *South African Journal of Higher Education*, 19 (6), 1062-1073.
- Hanegan, Nikki. Price, Laura and Peterson, Jeremy. 2008. Disconnections Between Teacher Expectations and Student Confidence in Bioethics. *Science & Education*, 17 (8/9), p921-940, 4 charts, 4 graphs.
- Hurd, P.D. 2001. The changing Image of Biology. *The American Biology Teacher*, 63(4), 233-235.
- Itai, K. Asai, A. Tsuchiya, Y. Onishi, M. and Kosugi, S. 2006. How do bioethics teachers in Japan cope with ethical disagreement among healthcare university students in the classroom? A survey on educators in charge. *Journal of Medical Ethics*, 32 (5), 303-308.
- Lundmark, C. 2002. Improving the Science Curriculum with

## **Bioethics among Biology Teachers and the Way They Integrate them in their Teaching**

*Khawlah Y. Hasanain and Ibrahim Al-Momani\**

### **ABSTRACT**

The purpose of this study was to investigate the common percentage of bioethics principle among biology teachers, and determine the effect of teacher's gender, years of experiences, and how to be integrated into instruction. Data were collected from (101) teachers by used a questionnaire which was consist of ten bioethical issues, in four districts of UNRWA schools. Results revealed that the most frequent principle among teachers is the religious principle, whereas the least frequent principle is the utilitarian.

Teaching experience had no effect, and the majority of the teachers (%90.70) used to integrate the correlated issues of bioethics into instruction by using the most frequent technique of just giving their opinions, lecturing, discussion, while the least functional technique used in instruction was: cooperative learning, conducting research, trip fields, worksheets, and debates. In the light of the research findings, some recommendations were derived.

**Keywords:** The Bioethics, Biology Teachers, Teaching.

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