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Teacher Training, Sexuality Education, and Intellectual Disabilities: An Online Workshop

Katia Gonzalez-Acquaro
Wagner College

The focus of this study was to assess the impact of an online workshop on teachers' knowledge, attitudes, and self-efficacy beliefs toward sexuality education and intellectual disabilities. A pretest-post-test group design was implemented for this study. Sixty-eight teachers were randomly assigned to one of two training conditions or a control group. Results demonstrated that teachers in both training groups, information and information/reflection, scored significantly higher compared to the control group on the Knowledge toward Sexuality Education and Intellectual Disabilities Questionnaire, the Attitudes toward Sexuality Education and Intellectual Disabilities Survey, and the Self-Efficacy toward Sexuality Education and Intellectual Disabilities Survey. Teachers in the information/reflection group scored the highest of all three groups on the Attitudes toward Sexuality Education and Intellectual Disabilities Survey.

Individuals with intellectual disabilities have made significant strides in the area of legal rights for community integration (Tepper, 2001). Rights such as employment, housing, marriage, schooling, parenthood and sexual intimacies are now in place. Unfortunately, "attitudes toward people with disabilities have not changed as fast as the laws enacted to support them" (Tepper, 2001, p. 5).

An area that can greatly impact the lives of people with intellectual disabilities and that continues to be plagued with myths is sexuality. Labels about the sexuality of individuals with intellectual disabilities have often created situations of unfairness and a reluctance by many to provide sexuality education appropriate to the needs of each individual (McCabe, 1993). Opportunities need to be provided to understand rights (Mithaug, 1996). The unfairness of having legal rights in place to secure community integration without the necessary education and training can cause many negative effects such as victimization, abuse, HIV, and unwanted pregnancies to name a few.

The Sexuality Information and Education Council of the United States (SIECUS) defines sexuality education as a "lifelong process of acquiring information and forming attitudes, beliefs and values. It encompasses sexual development, reproductive health, interpersonal relationships, affection, intimacy, body image, and gender roles" (SIECUS, 2009, para 1).

The definition of what sexuality education means is an important consideration when thinking about ways to adapt and implement a program for students with intellectual disabilities. SIECUS's definition of sexuality education provides an example on how sexuality is more than sexual intercourse and how different domains and their significance can greatly impact opportunities for community integration.

Review of Relevant Literature

Schooling and Sexuality Education

There are many legal mandates in place to ensure that students with disabilities have access to and make progress in the general education curriculum (Wehmeyer, Lance, & Bashinski, 2002). The American Association of Intellectual and Developmental Disabilities (AAIDD), formerly known as The American Association on Mental Retardation (AAMR), defines intellectual disabilities as "a disability that is characterized by significant limitations both in intellectual functioning and in adaptive behavior as expressed in conceptual, social, and practical adaptive skills. This disability originates before the age of 18" (AAIDD, 2008, para 2).

Sexuality education, a subject of discussion in many schools, is often a controversial topic and when issues of disabilities are added to the conversations a variety of opinions exist (Blanchett & Wolfe, 2002). Decisions on the type of sexuality education programs, curriculum and standards that should or should not be provided in schools are often left to the local level and typically include comprehensive, abstinence based, abstinence only, abstinence only until marriage, and fear based programs. Many of these types of programs are often developed to "complement or augment" the information that students may be receiving at home (SIECUS, 2001, p.2) with families having different options such as "opt in/out" policies and requirements. "The federal government does not have a direct role in local sexuality. Instead, it leaves such control to state and local bodies…States are much more directly involved in decisions about sexuality education. States can mandate that sexuality education be taught, require schools to teach about STDs or HIV/AIDS, set state-wide guidelines for topics, choose curricula, and approve textbooks" (SIECUS, 2001, para 23).

Sexuality education can often provide students with intellectual disabilities with the opportunity to learn appropriate socio-sexual skills, protect themselves from sexual abuse, sexually transmitted diseases, and unwanted pregnancies (Sparks, 2004). "The fact is that people with disabilities have the same emotional and physical needs and desires as people that are not disabled" (Tepper, 2001, p. 5) but the "social isolation as well as functional limitations" can often impact social/sexual development (Sweeney, 2007, p. 6).

Sexuality Education and Teacher Training

While politicians, families, students and communities debate on the type of sexuality education program that should or should not be made available in schools, some teachers are often left with the difficult decision of understanding the different viewpoints and sometimes having to select information or follow curriculum that will meet the needs of all students, while also following local mandates. Even if a teacher is not directly asked to focus in areas of sexuality education, it may not be uncommon for teachers to be exposed to questions students and families may have about the topic, making many teachers feel unsure about how to handle specific questions. Hausman and Rusek (1995) stated that "classroom teachers, not specialists, provide most of the health teaching in elementary schools"(p, 81), while Getch, Branca, Fitz-Gerald, and Fitz-Gerald (2001) explained that " In U.S. public schools, physical education teachers are most likely to provide sexuality education in middle and high schools, followed by health educators, biology teachers, home economics teachers, and school nurses" (p. 402) making it a necessary training topic for all in the education field. "Because sexuality issues touch on so many developmental issues relating to children and youth, SIECUS has, since 1965, urged that all pre-service teachers for prekindergarten through 12th grade receive at least one course in human sexuality" (Rodriguez, 2000, p. 68).

Many teachers report feeling ill prepared during their teacher education programs and receiving little, if any, professional development related to this topic and how to answer questions that could be raised during class (Rodriguez,Young, Renfro, Ascencio, & Haffner, 1996, Howard-Barr, Rienzo, Pigg, & James, 2005). School districts that do provide training for selected teachers may differ in the way training is provided creating the possibility of some teachers receiving more or less information (especially in adaptations for intellectual disabilities) as well as curriculum materials. Wolfe and Blanchett (2000) pointed out that "personnel delivering socio-sexual information should be aware of their personal values related to sexuality and persons with disabilities and actively guard against imposing their values on others" (p.6). Assessing teachers' self-efficacy, the "belief in one's capabilities to organize and execute course of actions required to manage prospective situations" (Bandura, 1995, p. 2), is essential, especially when curriculum implementation can be greatly affected by teachers' perceptions of their own capabilities to administer a particular curriculum. Research has indicated the need for training and accessible information in the area of sexuality education and intellectual disabilities (Bowder, Lanning, Pipping, & Tanner, 2003)

Howard- Barr, Rienzo, Pigg, and James (2005) reported the need for research to address the effects of a course in teachers' knowledge as well as adding a more in depth way to study the comfort level of teachers in teaching the topic of sexuality

education to students with intellectual disabilities. Providing teachers with the opportunity to receive knowledge as well as work through their own anxieties is important (Donovan, 1998) and teachers "should be required to have a good command of the subject matter, and adequate level of comfort with the content, and should engage in active value clarification" (Blanchett & Wolfe, 2002, p.55).

Theoretical Framework

Adult Learning Theory

Professional development for teachers vary with challenges such as funding and scheduling conflict playing a role on the different opportunities that may be available. Because many teachers may be coming into the profession with limited information about sexuality education and sexuality education for students with intellectual disabilities, professional development in an online format was chosen as the medium to increase the number of teachers accessing information related to the topic while taking into consideration ways adults learn. When in-person professional development or courses are not possible due to funding or scheduling conflicts, online learning provides an alternative medium to deliver information (Tinker, 2000).

The online seminar was constructed to take into consideration the needs of adult learners. Knowles (1984) theory of andragogy has been widely utilized in the development of online learning environments and was selected to serve as a framework for this study. Andragogy focuses on the process of learning and how adult learners self-direct their instruction. "Adults need to know why they need to learn something; adults maintain the concept of responsibility for their own decisions, their own lives; adults enter the educational activity with a greater volume and more varied experiences than do children; adults have a readiness to learn those things they need to know in order to cope effectively with real life situations; adults are life-centered in their orientation to learning; and adults are more responsive to internal motivators than external motivators"(Knowles, Holton, & Swanson, 2005, p. 72). The online seminar provided teachers with the opportunity to receive the latest resources, while self-directing their learning, and engaging in personal inquiry. The tasks and readings created opportunities to connect information to current and future needs in the classroom while using a variety of instructional strategies such as a movie clip, links to research articles, information on local and national viewpoints, news digests, quotes, and a section of resources of books. The online learning environment also provided learners with the opportunity to work through sensitive issues of their own values and attitudes in a "non-threatening environment" (Weerakoom, 2003, p.15). Additionally, the need for learners to reflect on their learning relating it back to goals of a section they may be working on has been recommended as an essential practice (Laurillard, 1993).

Due to the limited research in the online training of teachers in the area of sexuality education and intellectual disabilities, the literature on the training of health professionals in health education (Weerakoon, 2003) was utilized as the rationale for comparing the two specific training conditions for the training of teachers. Weerakoon (2003) suggested providing learners with opportunities to use reflective journals to "record feelings and thoughts" (p. 16).

Research Questions

The research question addressed in the study was: Following a sexuality education and intellectual disability online seminar, do treatment groups (information vs. information/reflection, vs. control) differ significantly on post-test scores on the knowledge, attitudes, and self-efficacy toward sexuality education and intellectual disabilities?

Table 1

Summary of Teachers' Demographics and Characteristics within Treatment Groups

	Training Groups		
	Information N=22	Information/Reflection N=25	Control N=21
Training area			
General	18	10	17
Special Education	4	15	4
Education Level			
Bachelor's	12	17	11
Master's	10	8	10
Doctorate	0	0	0
Gender			
Male	6	5	5
Female	16	20	16
Age			
20-30	14	21	12
31-40	8	4	9

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Method

Recruitment of participants was done with fliers throughout a large urban university, advertisement on an online community for teachers and administrators, and by emailing school administrators about the study with a copy of the flier (emails were found in the Department of Education websites). For the purpose of this study, the term

"teacher" was utilized to classify both general education teachers (those not trained as a special education teacher) and special education teachers.

A demographic questionnaire indicated that the sample size (N = 68) included 45 general education teachers and 23 special education teachers. A total of 23.53% were males (N = 16) and 76.47% were females (N = 52) with 69.12% of the participants between the ages of 20 - 30 years (N = 47) and 30.88% between 31 - 40 years of age (N = 21).

Table 2

Summary of Teachers' Grade Levels, Years of Teaching Experience, and Background/Experience with Students with Intellectual Disabilities within Treatment Groups

	Training Groups		
	Information N=22	**Information/Reflection** N=25	**Control** N=21
Grade Levels			
Toddlers (0-3 years old)	1	0	0
Preschoolers (3-5 years old)	3	0	0
Elementary (K-5)	12	18	5
Middle (6-8)	5	5	14
High School (9-12)	1	2	2
Years of Teaching Experience			
0-3	15	13	10
4-6	7	12	9
7-9	0	0	2
Background/Experience with MR			
Yes	7	13	6
No	15	12	15

A total of 58.82% of teachers had a Bachelor's Degree (N = 40) while 41.18% of teachers had a Master's Degree (N = 28). Teachers in this study taught the following grade levels: 1.47% toddlers (N = 1), 4.41% preschool (N = 3), 51.47% elementary (N = 35), 35.29% middle school (N = 24), and 7.35% high school (N = 5). A total of 55.88% of teachers had 0-3 years of teaching experience (N = 38), 41.18% had 4-6 years of experience (N = 28), and 2.94% had 7-9 years of experience (N = 2), with 38.24% of teachers having background experience with students with intellectual disabilities (N = 26), and 61.76% of teachers not having any background (N = 42). Teachers rated their professional preparation to teach sexuality education to students with intellectual disabilities as 36.77% poor (N = 25), 58.82% below average (N = 40), and 4.41% average (N = 3). Teachers' history of preparation in sexuality education included 7.35 % having a college general course (N = 5), 14.71% having a college sexuality course (N = 10), 23.53% having a college special education course (N = 16), 1.47% having staff development (N = 1), 10.29% having conferences or workshops (N = 7), and 42.65% none of the above or other (N = 29).

Teachers' demographics and characteristics, grade levels taught, years of teaching experience, background with students with intellectual disabilities, as well as professional preparation toward sexuality education and intellectual disabilities and history of preparation in sexuality education are provided for each treatment group in Tables 1-3. A copy of the demographic questionnaire can be found in Appendix A.

Table 3.

Summary of Teachers' Professional Self-Ratings of Their Preparation with Sexuality Education and Intellectual Disabilities and History of Preparation in Sexuality Education within Treatment Groups

	Training Groups		
	Information N=22	**Information/Reflection** N=25	**Control** N=21
Professional Preparation (self-ratings)			
Poor	7	15	3
Below Average	15	10	15
Average	0	0	3
Above Average	0	0	0
Excellent	0	0	0
History of Preparation			
College General Course	3	2	0
College Sexuality Course	5	2	3
College Special Education Course	3	8	5
Staff Development by School or District	0	0	1
Conferences/Workshop	3	4	0
None of the Above/Other	8	9	12

Design

A group experimental design was utilized for this study. Teachers' were assigned randomly by the computer program to either the information group, the information/reflection group, or the control group.

The independent variable of this study was the type of treatment which consisted of two training

groups (information and information/reflection) and a control group. The training groups, information and information/reflection, received a five-week online seminar. The main dependent variables of interest included: (a) teachers' knowledge of sexuality education and intellectual disabilities; (b) teachers' attitudes towards sexuality education and intellectual disabilities, and (c) teachers' self-efficacy beliefs towards sexuality education and intellectual disabilities. Teachers' responses were evaluated utilizing pre- and post-test information.

Measures

Dependent Measures

Teachers' Knowledge of Sexuality Education and Intellectual Disabilities Questionnaire. *Teachers' Knowledge of Sexuality Education and Intellectual Disabilities Questionnaire (TKSEID)* was developed by the researcher to assess teachers' knowledge of sexuality education as well as intellectual disabilities. The questionnaire consisted of 19 multiple-choice questions. These questions were selected based on current topics and research in the area of sexuality education and intellectual disabilities.

Reliability and Validity of TKSEID. Internal consistency tests for the teachers' pretest scores on TKSEID (N = 19) yielded a Cronbach's alpha of .70. This result indicated that all questions assessed the treatment consistently and reliably. The multiple choice questionnaire was determined as content appropriate by 9 special education teachers for children with intellectual disabilities and 1 professor in the area of sexuality education. A copy of TKSEID can be found in Appendix B.

Teachers' Attitudes toward Sexuality Education and Intellectual Disabilities Survey. *Teachers' Attitudes toward Sexuality Education and Intellectual Disabilities Survey (TASEID)* was created as a Likert-scale survey based on the recommended sexuality topics in a comprehensive sexuality education program as identified by the Sexuality Information and Education Council of the United States (National Guidelines Task Force-SIECUS, 1996). These recommended topics were provided by SIECUS as guidelines to what topics a sexuality education program should teach if it is going to be comprehensive. Teachers were asked to indicate their beliefs about the importance of teaching each topic to students with intellectual disabilities and teachers were also asked about their beliefs toward the importance of teaching these topics in different grade levels for students with and without intellectual disabilities.

Reliability and Validity of TASEID. Reliability and validity of the Teachers' Attitudes toward Sexuality Education and Intellectual Disabilities survey (N = 44) yielded a Cronbach's alpha score of .95. The attitude survey was determined as appropriate in content by 9 special education teachers and 1 professor in the area of sexuality education. A copy of TASEID can be found in Appendix C.

Teachers' Self-Efficacy toward Sexuality Education and Intellectual Disabilities. *Teachers' Self- Efficacy toward Sexuality Education and Intellectual Disabilities (TSESEID)* was measured utilizing a teacher efficacy scale modeled on the work by Bandura (1990) and revised by the researcher to meet the needs of this study. Teachers completed a Likert-scale survey consisting of 25 questions related to sexuality education and intellectual disabilities fitting into seven dimensions of teacher efficacy: efficacy to influence decision making, efficacy to influence school resources, instructional self-efficacy, disciplinary self-efficacy, efficacy to enlist parental involvement, efficacy to enlist community involvement, and efficacy to create a positive school climate. The scale was modified to provide teachers with the opportunity to indicate their opinion about statements that related to instruction of sexuality education for students with intellectual disabilities.

Reliability and Validity of TSESEID. Internal consistency tests for the pretest of the TSESEID survey (N = 25) yielded a Cronbach's alpha of .95. The self-efficacy survey was determined as content appropriate by 9 special education teachers and 1 professor in the area of sexuality education. A copy of TSESEID can be found in Appendix D.

Procedure

Pre-Test Phase

Teachers participating in the self-paced seminar were provided with a URL, the website address, in which the seminar was located. The website in which the online seminar was hosted was programmed to randomly assign teachers into one of the three groups, information, information/reflection, or control group. After entering the website, teachers were taken to the login page which provided information about the study as well as the research description and the participants' rights to read. Teachers agreeing to participate had to click the I AGREE button at the bottom of the page which documented informed consent of the participants. Teachers had the choice of agreeing or not agreeing to participate. Access to the seminar was only provided if the I AGREE button was selected. After teachers completed the online demographic questionnaire, the pretest questionnaire and surveys and submitted each by pressing submit, the computer generated an individual code which they needed to use to reenter the seminar. Teachers in the control

group received a code that provided them access to the seminar after five weeks. This code was only given after all pretests, Teachers' Knowledge toward Sexuality Education and Intellectual Disabilities, Teachers' Attitudes toward Sexuality Education and Intellectual Disabilities, and Teachers' Self-Efficacy toward Sexuality Education and Intellectual Disabilities were completed. All scores obtained during this phase of the study were used for the pre test data analyses.

Intervention Phase

Once the teachers completed the demographic questionnaire as well as the pre test questionnaire and surveys, a computer generated code randomly assigned teachers to one of three treatment conditions: information, information/reflection, or control.

Information condition. The information condition consisted of four units with a total of 14 lessons taking approximately 10 hours to complete. In unit 1, teachers learned about the definition of sexuality, facets about sexuality, and how the social sexual self develops. Unit 2 contained information about the history of sexuality education in the United States and characteristics of different sexuality education choices. Unit 3 provided background on intellectual disabilities, the eugenics movement, the history of sexuality education and intellectual disabilities, some of the myths and barriers toward the sexuality education of students with intellectual disabilities, and curriculum choices. Unit 4 provided teachers with information on laws affecting the sexuality education of students with intellectual disabilities, such as IDEA and Least Restrictive Environment, No Child Left Behind, and funding information. Activities utilized in some of the units consisted of readings, reports, and watching a movie clip. In addition, the information group was asked to answer factual questions at the end of each unit. These questions were not the same as the ones used in the pre and post-test questionnaire. Participants had to answer the questions before the application would allow them to continue into the next section. These activities followed concepts of andragogy in which adult learners had opportunities to self-direct their learning, relate to current and past learning experiences while having opportunities to apply concepts to real (Knowles, Holton, & Swanson, 1998). The data collected were entered automatically into a database after each teacher submitted an answer.

Information/reflection condition. The information/reflection condition consisted of the same content as the information condition taking approximately 10 hours to complete. However, instead of answering factual questions after each unit, teachers had the opportunity to reflect on the knowledge acquired by answering reflection questions that were embedded throughout the text. An essential aspect of the information/ reflection condition was to encourage teachers to work through what many may consider sensitive topics and reflect on their feelings and understanding toward the information they were learning. All reflection questions had to be answered before the application would allow them to move into the next section. The data collected were entered automatically into a database after each teacher submitted an answer.

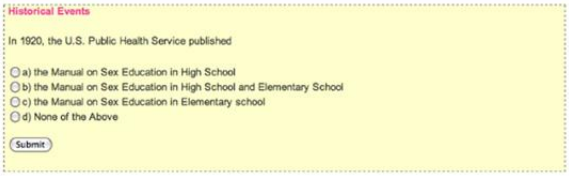

Figure 1. Example of a factual question in the information condition.

Figure 2. Example of a reflection question for the information/ reflection condition

Control condition. Teachers in the control condition received a code that granted them access after the five-week time frame that was assigned for the seminar after the data were collected.

Post-Intervention Phase

Post-intervention data collection took place after the five-week time frame assigned for the seminar. Although participants had access to the seminar for five weeks, it was designed to be completed in approximately 10 hours. The same procedures and measures that were used for the initial data collection were used again at the post-test phase for both training groups and the control group. All scores obtained during this phase of the study were used for the post data analyses. An overview of units, activities and instructional strategies for the online seminar can be found in Appendix E.

Data Analyses

Preliminary Data Analyses

Sixty-eight (68) participants were randomly assigned to either the information group, the information/ reflection group, or the control group. The information group consisted of twenty-two (22) teachers, the information/reflection had twenty-five (25) teachers, and the control group had twenty-one

(21) teachers. During preliminary data analyses, one-way ANOVAs were performed on pretest scores to ensure that no significant differences between the three groups existed prior to the seminar.

Means and standard deviations from teachers' pretest scores are provided in Table 4. Table 5 provides a summary of the one-way ANOVA on the pretest scores on the knowledge questionnaire. A one-way ANOVA on pretest scores did not show any significant differences between the three groups prior to the online seminar on the knowledge questionnaire.

Table 4

Means and Standard Deviations for Pretest Scores

	Information N=22		Information/Reflection N=25		Control N=21	
	Mean	SD	Mean	SD	Mean	SD
Knowledge	13.40	2.78	14.68	3.49	15.61	2.74
Attitudes	118.04	21.92	112.9	14.70	123.0	26.29
Self-Efficacy	59.72	12.18	61.72	13.17	70.61	10.42

Note. Means and Standard Deviations (SD) for Pretest Scores on Teachers' Knowledge of Sexuality Education and Intellectual Disabilities Questionnaire (19 multiple choice questions), Teachers' Attitudes toward Sexuality Education and Intellectual Disabilities Survey (44 Likert Scale Questions), and Teachers' Self- Efficacy Beliefs toward Sexuality Education and Intellectual Disabilities (25 Likert Scale Questions).

Table 5

Summary of One Way ANOVA on Pretest Scores on Knowledge of Sexuality Education and Intellectual Disabilities

Source	SS	df	MS	F
Between Groups	53.05	2	26.52	2.83
Within Groups	607.71	65	9.34	
Total	660.76	67		

Note. Sum of Squares (SS), Degree of Freedom (df), Mean Squares (MS), Ratio of the Between Groups by Within Groups Mean Squares (F).

Table 6 provides a summary on the one-way ANOVA on pretest scores on the attitudes survey. No significant differences were found on pretest scores on the ANOVA results of the attitudes survey.

Table 6

Summary of One Way ANOVA Results on Pretest Scores on Teachers' Attitudes toward Sexuality Education and Intellectual Disabilities

Source	SS	df	MS	F
Between Groups	1154.20	2	577.10	1.28
Within Groups	29103.91	65	447.75	
Total	30258.11	67		

Note. Sum of Squares (SS), Degree of Freedom (df), Mean Squares (MS), Ratio of the Between Groups by Within Groups Mean Squares (F).

Table 7 provides a summary of the one-way ANOVA on pretest scores on the self-efficacy survey. A one-way ANOVA on pretest scores revealed a significant difference between treatment groups on the self-efficacy measure, $F(2, 65) = 4.97$, $p < .01$.

The significant main effect for self-efficacy was followed up with Tukey (HSD) multiple-comparisons at the .05 level of significance. Tukey pairwise comparisons of the three groups indicated that the control group ($M = 70.61$) and the information group ($M = 59.72$) differed significantly at $p < .05$ and the control group and information/reflection group ($M = 61.72$) differed significantly at $p < .05$. Comparisons between the information and information/reflection did not reveal significant differences.

Assumptions were tested to determine whether the analysis of covariance (ANCOVA) could be used appropriately on post-test scores for self-efficacy to adjust for the pretest differences. Pearson Correlations were performed on teachers' pretest and post-test self-efficacy scores, within and across

groups, to test ANCOVA assumptions of linearity of regression and homogeneity of within-group regression. Table 8 is a summary of the Pearson correlation coefficients. The data showed significant positive correlations (above .30) between teachers' pretest and post-test performance on self-efficacy, both within and across groups, supporting the use of ANCOVA for this dependent variable.

Table 7

Summary on One Way ANOVA Results on Pretest Scores on Teachers' Self-Efficacy toward Sexuality Education and Intellectual Disabilities

Source	SS	df	MS	F
Between Groups	1449.52	2	724.76	4.97**
Within Groups	9464.35	65	145.60	
Total	10913.88	67		

* $p < 0.01$

Note. Sum of Squares (SS), Degree of Freedom (df), Mean Squares (MS), Ratio of the Between Groups by Within Groups Mean Squares (F). F (2, 65) = 4.97, p <. 01

Table 8

Pearson Correlations Between Teachers' Pretest and Post-test Performance on all Dependent Variables Among All Teachers and Within Treatment Groups

Dependent Variables	Pearson Correlations			
	Information N=22	**Information/Reflection N=25**	**Control N=21**	**All N=68**
Self-Efficacy	.47*	.63**	.97 **	.37**

* Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)

Main Analyses

Information, information/ reflection, and control group post-test performance on the post-test multiple-choice questionnaire on the knowledge section of sexuality education and intellectual disabilities were examined using a one-way ANOVA. Means and standard deviations are provided in Table 9. The results of the one way ANOVA are provided in Table 10. The analyses indicated that differences in the mean scores of teachers in the three groups were statistically significant F (2, 65) = 14.36, p < .05

Table 9

Means and Standard Deviations for Post-Test Scores

	Information N=22		**Information/Reflection N=25**		**Control N=21**	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
Knowledge	17.81	1.36	18.28	.97	15.52	2.78
Attitudes	149.22	12.31	185.60	13.5	123.71	27.25
Self-Efficacy	82.86	11.80	86.48	13.06	70.57	11.29

Note. Means and Standard Deviations (SD) for Post-test Scores on Teachers' Knowledge of Sexuality Education and Intellectual Disabilities Questionnaire (19 multiple choice questions), Teachers' Attitudes toward Sexuality Education and Intellectual Disabilities Survey (44 Likert Scale Questions), and Teachers' Self-Efficacy Beliefs toward Sexuality Education and Intellectual Disabilities (25 Likert Scale Questions).

Table 10

Summary of One Way ANOVA Results on Post-test Scores on Knowledge of Sexuality Education and Intellectual Disabilities

Source	SS	df	MS	F
Between Groups	96.14	2	48.07	14.36*
Within Groups	217.55	65	3.34	
Total	313.69	67		

* $p < 0.05$

Note. Sum of Squares (SS), Degree of Freedom (df), Mean Squares (MS), Ratio of the Between Groups by Within Groups Mean Squares (F). F (2, 65) = 14.36, p <.05

The pairwise comparisons between the three groups indicated that the information group (M = 17.81) and the information/ reflection group (M =

18.28) scored significantly higher compared to the control group (M = 15.52) at the .05 level, but the two training groups did not differ significantly from each other.

Information, information/ reflection, and control group post-test performance on the Likert-scale survey on attitudes toward sexuality education and intellectual disabilities were examined using a one-way ANOVA. The results of the one-way ANOVA are provided in Table 11. The analyses indicated that scores of teachers participating in the three groups were significantly different F (2, 65) = 64.69, p < .05. The pairwise comparisons between the three groups indicated that the training group information/ reflection (M = 185.60) and the training group information (M = 149.22) scored significantly higher compared to the control group (M = 123.71), and the two training groups did differ significantly from each other p < .05. The information/ reflection group scored higher than the other two groups.

Table 11

Summary of One Way ANOVA Results on Post-test Scores on Attitudes toward Sexuality Education and Intellectual Disabilities

Source	SS	df	MS	F
Between Groups	44691.54	2	22345.77	64.69*
Within Groups	22452.14	65	345.41	
Total	67143.69	67		

* p < 0.05

Note. Sum of Squares (SS), Degree of Freedom (df), Mean Squares (MS), Ratio of the Between Groups by Within Groups Mean Squares (F). F (2, 65) = 64.69, p<.05.

Information, information/ reflection, and control group post-test performance on the Likert-scale survey on self-efficacy toward sexuality education and intellectual disabilities were examined using ANCOVA, with post-test scores as the dependent variable and pretest scores as the covariate. The results of ANCOVA are provided in Table 12. The analyses indicated that scores of teachers participating in the three groups differed significantly F (2, 64) = 33.26, p< .05. Post Hoc comparisons of the three groups indicated that teachers in the training group information (M = 82.86) and the training group information/reflection (M = 86.48) scored significantly higher than teachers in the control group (M = 70.57) at p=.00, but the two training groups, information and information/ reflection, did not differ significantly from each other.

Table 12

Analysis of Covariance Results for Teachers Self-Efficacy toward Sexuality Education and Intellectual Disabilities

Source	TypeIII SS	df	MS	F
Corrected Model	7317.44	3	2439.14	29.20
Intercept	3084.01	1	3084.01	36.92
Covariate	4231.14	1	4231.14	50.66*
Group	5556.62	2	2778.31	33.26*
Error	5344.83	64	83.51	
Total	452193.00	68		

* p < 0.05

Additional Analyses on Demographics

Additional analyses were also performed within each group to compare teachers with general and special education certification because preliminary analyses had suggested differences in the proportions of teachers with each type of certification in the three treatment groups. Comparing means within each group on each dependent variable, t-test results indicated that the performance of teachers with general and special education certification did not differ significantly at the .05 level. Means and standard deviations are provided in Table 13. The t-test results for the type of certification are provided in Table 14.

Discussion

This study was designed to examine the effects of an online seminar on teachers' knowledge, attitudes, and self-efficacy beliefs toward sexuality education and intellectual disabilities. Teachers in the training groups, information and information/ reflection, scored significantly higher compared to teachers in the control group on the knowledge questionnaire, the attitudes survey, and the self-efficacy survey. Teachers in the information/re-

Table 13

Means and Standard Deviations (SD) for Comparisons of Participants with General and Special Education Certification

	Information N=22			Information/Reflection N=25			Control N=21		
	Mean	SD	n	Mean	SD	n	Mean	SD	n
Pre-Knowledge									
General Education	13.27	2.94	18	15.40	2.75	10	15.29	2.59	17
Special Education	14.00	2.16	4	14.20	3.93	15	17.00	3.36	4
Post-Knowledge									
General Education	17.94	1.21		18.20	.91		15.23	2.70	
Special Education	17.25	2.06		18.33	1.04		16.75	3.20	
Pre-Attitudes									
General Education	119.22	23.61		110.70	16.81		119.70	25.65	
Special Education	112.75	12.57		114.46	13.51		137.00	27.83	
Post-Attitudes									
General Education	149.94	13.51		181.70	10.22		120.47	27.03	
Special Education	146.00	3.26		188.20	15.15		137.50	27.19	
Pre- Self-Efficacy									
General Education	60.72	12.98		64.90	9.82		69.41	9.50	
Special Education	55.25	7.22		59.60	14.95		75.75	14.15	
Post-Self-Efficacy									
General Education	84.11	12.75		85.80	14.64		69.47	9.67	
Special Education	77.25	1.50		86.93	12.41		75.25	17.74	

Table 14

Summary of t-test Results for Within-Group Comparisons between Teacher Certification Subgroups

	Information N=22		Information/Reflection N=25		Control N=21	
	t	df	t	df	t	df
Pre-Knowledge	-.460	20	.835	23	-1.12	19
Post-Knowledge	.649	3.47	-.32	23	-.97	19
Pre-Attitudes	.525	20	-.61	23	-1.19	19
Post-Attitudes	.570	20	-1.18	23	-1.13	19
Pre-Self-Efficacy	.805	20	.98	23	-1.09	19
Post-Self-Efficacy	1.05	20	-.20	23	-.91	19

flection group scored the highest on the attitudes survey compared to the control and information only group.

Results of this study indicated that providing training for teachers in topics related to sexuality education and intellectual disabilities can increase not only their knowledge toward the topic but also their attitudes and their feelings of self-efficacy.

When creating this workshop, it was important to consider not only providing the latest resources but also giving teachers the opportunity to work through conflicting feelings as they were learning about the possible implications that providing or not providing information can have on students (Sparks, 2004). After the seminar, teachers in the information/reflection group scored significantly higher on the Attitudes toward Sexuality Education and Intellectual Disabilities Survey compared to both the control and the information only group. Research indicates that having opportunities to reflect can assist teachers in understanding and improving their teaching practice while helping teachers understand different viewpoints and needs (Carr & Kemmis, 1986). These findings are consistent with the literature that states that addressing teachers' firmly set attitudes is important in order for educators to talk about sexuality in the classroom (Bemish, 1987; Wolfe and Blanchett, 2000).

Limitations of the Study

Students with intellectual disabilities have the opportunity to be in classrooms with students without intellectual disabilities and be exposed to topics that are being implemented in the general education setting. "Although the practicalities of differentiating learning for children with special needs require firm commitment, the benefits for students are significant and include enhanced social skills, adopting more appropriate expressions of sexuality and reduced risk of sexual abuse, pregnancy and sexually transmitted diseases" (Sweeney, 2007, p.10).

This study contained a disproportionate number of special education teachers compared to general education teachers within the information/reflection group. Although t-tests within each of the three groups indicated that the performance of general and special education certification did not differ significantly, the possible influence of having more special education teachers in one of the training groups cannot be ruled out.

Findings of this study must be considered preliminary since teachers participating in this study volunteered, making it more likely that they were interested in learning more about the topic.

Another limitation of the study that must be taken into consideration is that the sample consisted of volunteers for an online learning environment that happened to be 40 years or younger, which raises issues of representativeness.

Directions for Future Research

This study adds to the literature on sexuality education and intellectual disabilities and the use of an online environment as a tool for the training of teachers in topics considered controversial and of immediate need. Specifically, it provided an online curriculum tailored to the needs of adult learners that targeted three important variables (knowledge, attitudes, and self-efficacy beliefs) that could be considered by many essential when training teachers in controversial topics. The online seminar demonstrated that training in the subject can make a significant difference in what is considered by many a challenging topic to expose participants to while focusing not only in helping teachers gain knowledge about the topic but also address attitudes toward it and self efficacy beliefs. The online seminar also demonstrated the significant effect of reflection while providing a way for teachers to access information and resources.

The exposure to the latest research and examples proved to be effective for teachers participating in the training groups of this study. A longitudinal study could assist in understanding if these positive effects are maintained throughout time.

Additional research is needed measuring the knowledge, attitudes, and self- efficacy of school principals since they greatly affect policy implementation and could impact favorably the type of sexuality education provided to students with intellectual disabilities.

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Appendix A

1) Main certification (if applicable): please select

2) Highest level of education completed:

	Degree Concentration	Date completed
Bachelor's Degree	_____	mm yyyy
Master's Degree	_____	mm yyyy
Doctoral Degree	_____	mm yyyy

3) Age: please select

4) Gender please select

5) Years of teaching experience (if less than one year, state the information in months)

Population	*Number of years*
Infant and Toddlers (0-3 years old)	_____
Preschoolers (4-5 years old)	_____
Elementary (K-5 grade)	_____
Middle School (6-8 grade)	_____
High School (9-12 grade)	_____

6) **Background/Experience with students with mental retardation** please select

7) **How would you rate your professional preparation to teach sexuality education to students with mental retardation?**

○ Poor ○ Below average ○ Average ○ Above average ○ Excellent

8) **History of preparation in sexuality education** please select

Submit

Appendix B

Please select the answer that is most correct.

1. Mental Retardation originates before the age of:
   - ○ 20
   - ○ 06
   - ○ 18
   - ○ 02

2. Mental Retardation is a disability characterized by:
   - ○ significant limitations in intellectual functioning
   - ○ significant limitations in adaptive behavior
   - ○ significant limitations in intellectual functioning and adaptive behavior
   - ○ none of the above

3. A comprehensive sexuality education program emphasizes:
   - ○ HIV prevention only
   - ○ HIV and AIDS education
   - ○ HIV prevention, AIDS education, and Abstinence
   - ○ none of the above

4. People with mental retardation have the tendency to be
   - ○ asexual (no interest in sexuality)
   - ○ sexual but not capable of emotional relationships
   - ○ oversexed
   - ○ sexual and capable of emotional relationships

5. Sexuality education in the United States is:
   - ○ A mandate for all public schools
   - ○ A choice for school districts
   - ○ A mandate for private and public schools
   - ○ None of the above

6. An abstinence only sex education program is a curriculum that mentions:
   - ○ the use of contraception
   - ○ the importance of preventing diseases
   - ○ abstinence for sexual behavior before marriage
   - ○ abstinence for sexual behavior before marriage and contraception

7. Compared to people without mental retardation, people with mental retardation have:

   ○ lower sex drives
   ○ higher sex drives
   ○ no sex drives
   ○ same sex drive

8. During puberty, people with mental retardatoin exhibit:
   ○ no physical changes
   ○ limited physical changes
   ○ normal physical changes
   ○ none of the above

9. People with mental retardation:
   ○ have the legal right to be sexually active
   ○ do not have the legal right to be sexually active
   ○ have the legal right to be sexually active under supervision
   ○ have the legal right to sexually active with limitations

10. For people with mental retardation, sexuality education
    ○ encourages sexuality
    ○ creates confusion
    ○ encourages sexuality and creates confusion
    ○ none of the above

11. Sexuality education can be:
    ○ not effective for students with mental retardation
    ○ effective in teaching responsible sex to students without mental retardation only.
    ○ effective for some students with mental retardation
    ○ effective for students with and without mental retardation

12. Sterilization for people with mental retardation is the only way to
    - ○ prevent unwanted pregnancies
    - ○ provide birth control
    - ○ assure safe sexual practices
    - ○ none of the above

13. Sex education for students with mental retardation must be
    - ○ a part of their lives
    - ○ not dicussed
    - ○ dicussed only when questions arise
    - ○ none of the above

14. The Individuals with Disabilities Act (IDEA, 1997) states that
    - ○ some children should be educated in the least restrictive environment as long as the topic is not sexuality
    - ○ no children should be educated in the least restrictive environment when the topic of sexuality is discussed in the classroom.
    - ○ children of all abilities and to the maximum extent be educated in the least restrictive environment if they do not have mental retardation
    - ○ children of all abilities and to the maximum extent be educated in the least restrictive environment regardless of the topics being discussed.

15. Sexuality education for students with mental retardation does
    - ○ not require parental permission
    - ○ require parental permission
    - ○ require permission according to child's needs
    - ○ none of the above

16. Adapting a curriculum in sexuality education for students with mental retardation means:
    - ○ holding separate classes for students with mental retardation
    - ○ adjusting educational standards to match the student's ability
    - ○ only teaching items students can understand
    - ○ none of the above

17. People with mental retardation are
    - ○ primary targets for sexual exploitation
    - ○ not a target for sexual exploitation due to lack of sexuality
    - ○ only a target for sexual exploitation when exposed to sexuality education
    - ○ none of the above

18. Sex education for students with mental retardation
- ○ stimulates sexuality activity
- ○ does not have an effect on sexual activity
- ○ stops sexual activity
- ○ teaches responsible choices

19. People with mental retardation
- ○ have the right to marry and have children
- ○ do not have the right to marry but do have the right to have children
- ○ have the right to marry and do not have the right to have children
- ○ do not have the right to marry and do not have the right to have children

Submit

Appendix C

The American Association of Mental Retardation (AAMR) provides the following definition: "Mental Retardation is a disability characterized by significant limitations both in intellectual functioning and in adaptive behavior as expressed in conceptual, social, and practical adaptive skills" (AAMR, 2002).

Please indicate your beliefs about the importance of teaching each topic to students classified with mental retardation.

SD= Strongly Disagree D= Disagree N= Neutral A= Agree SA= Strongly Agree

	Human Development	**SD**	**D**	**N**	**A**	**SA**
1	Reproductive Anatomy and Physiology	O	O	O	O	O
2	Reproduction	O	O	O	O	O
3	Puberty	O	O	O	O	O
4	Body Image	O	O	O	O	O
5	Sexual Identity and Orientation	O	O	O	O	O
	Relationships	**SD**	**D**	**N**	**A**	**SA**
6	Families	O	O	O	O	O
7	Friendship	O	O	O	O	O
8	Love	O	O	O	O	O
9	Dating	O	O	O	O	O
10	Marriage and Lifetime Commitment	O	O	O	O	O
11	Raising Children	O	O	O	O	O
	Personal Skills	**SD**	**D**	**N**	**A**	**SA**
12	Values	O	O	O	O	O
13	Decision Making	O	O	O	O	O
14	Communication	O	O	O	O	O
15	Assertiveness	O	O	O	O	O
16	Negotiation	O	O	O	O	O
17	Looking for Help	O	O	O	O	O
	Sexual Behavior	**SD**	**D**	**N**	**A**	**SA**
18	Sexuality Thorughout the Lifespan	O	O	O	O	O
19	Masturbation	O	O	O	O	O
20	Shared Sexual Behavior	O	O	O	O	O
21	Abstinence	O	O	O	O	O
22	Human Sexual Response	O	O	O	O	O
23	Fantasy	O	O	O	O	O
24	Sexual Dysfunction	O	O	O	O	O
	Sexual Health	**SD**	**D**	**N**	**A**	**SA**
25	Contraception	O	O	O	O	O
26	Abortion	O	O	O	O	O
27	Sexually Transmitted Diseases	O	O	O	O	O
28	Sexual Abuse, asault, Violence and Harrasement	O	O	O	O	O

29	Reproductive Health	O	O	O	O	O
30	HIV and AIDS	O	O	O	O	O
31	Pregnancy and Pre-natal Care	O	O	O	O	O

Society and Culture		**SD**	**D**	**N**	**A**	**SA**
32	Sexuality and Society	O	O	O	O	O
33	Gender Roles	O	O	O	O	O
34	Sexuality and the Law	O	O	O	O	O
35	Sexuality and Religion	O	O	O	O	O
36	Diversity	O	O	O	O	O
37	Sexuality and the Arts	O	O	O	O	O
38	Sexuality and the Media	O	O	O	O	O

For questions 39-41, please indicate if you believe at least some sexuality education should be provided to students with mental retardation at the levels listed.

		SD	**D**	**N**	**A**	**SA**
39	Elementary Education	O	O	O	O	O
40	Middle School	O	O	O	O	O
41	High School	O	O	O	O	O

For questions 42-44, please indicate if you believe at least some sexuality education should be offered to students without disabilities at the levels listed.

		SD	**D**	**N**	**A**	**SA**
42	Elementary Education	O	O	O	O	O
43	Middle School	O	O	O	O	O
44	High School	O	O	O	O	O

Submit

Appendix D

Please indicate your opinions about each of the statements below by circling the appropriate number.

Efficacy to Influence Decision Making

1. How much can you influence the decisions that are made in your school regarding sexuality education and mental retardation?

Nothing | Very Little | Some Influence | Quite a Bit | A Great Deal

2. How much can you express your views freely on the topic of sexuality education and mental retardation?

Nothing | Very Little | Some Influence | Quite a Bit | A Great Deal

Efficacy to Influence School Resources

3. How much can you do to get the instructional materials and equipment you need to teach sexuality education to students with mental retardation?

Nothing | Very Little | Some Influence | Quite a Bit | A Great Deal

Instructional Self-Efficacy

4. How much can you do to influence the way you communicate with students with mental retardation about sexuality?

Nothing | Very Little | Some Influence | Quite a Bit | A Great Deal

5. How much can you do to promote learning about sexuality education for students with mental retardation when there is a lack of support from the home?

Nothing | Very Little | Some Influence | Quite a Bit | A Great Deal

6. How much can you do to keep students with mental retardation interested in topics of sexuality?

Nothing | Very Little | Some Influence | Quite a Bit | A Great Deal

7. How much can you do to increase the memory of students with mental retardation of what they have been taught in previous lessons about sexuality?

Nothing	Very Little	Some Influence	Quite a Bit	A Great Deal
○	○	○	○	○

8. How much can you do to motivate students with mental retardation who show low interest in the topic of sexuality?

Nothing	Very Little	Some Influence	Quite a Bit	A Great Deal
○	○	○	○	○

9. How much can you do to get students with and without mental retardation to work together when participating in the sexuality education curriculum?

Nothing	Very Little	Some Influence	Quite a Bit	A Great Deal
○	○	○	○	○

10. How much can you do to overcome the influence of adverse community conditions on students' with mental retardation learning about sexuality?

Nothing	Very Little	Some Influence	Quite a Bit	A Great Deal
○	○	○	○	○

Disciplinary Self-Efficacy

11. How much can you do to control disruptive behavior from students with mental retardation in the classroom that may arise when the topic of sexuality education is discussed?

Nothing	Very Little	Some Influence	Quite a Bit	A Great Deal
○	○	○	○	○

12. How much can you do to prevent possible difficult behavior from students with mental retardation that may arise when the topic of sexuality education is discussed in your classroom?

Nothing	Very Little	Some Influence	Quite a Bit	A Great Deal
○	○	○	○	○

Efficacy to Create a Positive School Climate

19. How much can you do to make the school a safe place to discuss topic of sexuality with students with mental retardation?

Nothing | Very Little | Some Influence | Quite a Bit | A Great Deal

20. How much can you do to make students with mental retardation enjoy learning about sexuality?

Nothing | Very Little | Some Influence | Quite a Bit | A Great Deal

21. How much can you do to get students with mental retardation to trust teachers to discuss topic of the sexuality education curriculum?

Nothing | Very Little | Some Influence | Quite a Bit | A Great Deal

22. How much can you help other teachers with their teaching skills in the area of sexuality and mental retardation?

Nothing | Very Little | Some Influence | Quite a Bit | A Great Deal

23. How much can you do to enhance collaboration between teachers and the administration to make the Sexuality education program run effectively for students with mental retardation?

Nothing | Very Little | Some Influence | Quite a Bit | A Great Deal

24. How much can you do to reduce school absenteeism from students with mental retardation when the topic of sexuality education is discussed?

Nothing | Very Little | Some Influence | Quite a Bit | A Great Deal

25. How much can you do to get students with mental retardation to believe they are capable in understanding topics discussed in the sexuality curriculum?

Nothing | Very Little | Some Influence | Quite a Bit | A Great Deal

Submit

Appendix E

Unit 1.1 Defining Sexuality
Activities: Research articles

- Definition of sexuality
- Definition of the many facets about sexuality
- Description of how the social and sexual self develops

Instructional Strategies: Multiple choice fact questions (Information Group)
Or Reflection questions (Information/Reflection Group).

Unit 1.2 Curriculum Choices
Activities: Articles, news digest

- Description of the history of sexuality education in the US
- Identification of the characteristics of an Abstinence based only and Abstinence Based Sexuality Education Program
- Identification of the characteristics of a Comprehensive Sexuality Education Program
- A comparison and summary of the differences between curriculum choices

Instructional Strategies: Multiple choice fact questions (Information Group)
Or Reflection questions (Information/Reflection Group).

Unit 1.3
Sexuality Education and Mental Retardation
Activities: Articles, movie clip

- Definition of mental retardation
- Definition of the eugenics movement and description of its influence on the lives of people with mental retardation
- Description of the history of sexuality education and mental retardation
- Examination of some of the barriers and myths toward sexuality education and mental retardation
- Description of current research and summary of the developments of sexuality education curriculum for students with mental retardation.

Instructional Strategies: Multiple choice fact questions (Information Group)
Or Reflection questions (Information/Reflection Group).

Unit 1.4
Laws Affecting Sexuality Education for Students with Mental Retardation
Activities: News Briefs, articles.

- Description of IDEA and a Least Restrictive Environment (LRE)
- Description of No Child Left Behind, and funding for sexuality education programs in schools

Instructional Strategies: Multiple choice fact questions (Information Group)
Or Reflection questions (Information/Reflection Group).

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Author Notes
Katia Gonzalez-Acquaro
Wagner College

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