

Development and effectiveness assessment of a sex education learning unit for Thai primary students

Sex education
learning unit

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Abstract

Purpose – This study explored the effectiveness of sex education lessons developed for six graders by the local community and experts.

Design/methodology/approach – Three lesson plans were developed based on a focus group discussion with students, parents, and teachers and then revised based on experts' feedback. The finalized three lessons were taught to 102 sixth graders in three different primary schools. Pre-test and post-test the students' sex education understanding was measured, and a 5-point Likert scale questionnaire was used to measure overall sexual attitude and awareness. The participants engaged in a semi-structured interview after each lesson, supplemented with researchers' notes. Descriptive statistics and *t*-tests, and the comparative method were used to analyze quantitative and qualitative data, respectively.

Findings – The sex education knowledge of participants at the three schools improved significantly ($p < 0.01$) after completing the learning units. Students also expressed satisfaction with the media, activities, and discussions during these sex education classes. The created learning units improved students' sexual attitude and awareness.

Research limitations/implications – Further long-term follow-up studies are needed to determine if there is retention of knowledge, attitudes, and awareness.

Practical implications – There should be more sex education programs at the earlier primary school level, especially in risky regions. Compulsory sex education curriculum in primary schools needs to be adjusted for each school by using a constructivist approach.

Originality/value – This study is unique because it was designed to better fit a specific school's context and the contents were adapted to be taught by a teacher with minimal training required.

Keywords Sex education, Learning unit, Primary students, Teen pregnancy, Parental involvement, Thailand

Paper type Research paper

Introduction

Preteen sex causes severe health and social problems. It leads to sexually transmitted infections[1], AIDS[2], and unplanned teenage pregnancy. Because of social stigma, preteens are more likely to undergo illegal abortions. An estimated 50% abortions in Southeast Asia are hazardous, causing health complications and even death[3]. Teen pregnancy has severely affected both developed and developing countries, and more teens have intercourse at an earlier age[4]. In 2016, the average age of the first sexual encounter in Thailand was 13.2 for

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males and 13.3 for females[5]. The 2017 birth rate for Thai females aged 15–19 was 39.6 per 1000, and for ages 10–14, it was 1.3 per 1000[6]. Samutsakorn Province, the location for this research project, has a more serious problem with teen pregnancy than does the whole nation. The area's birth rate was 56.3 per 1000 among girls aged 15–19 years, making it the fifth highest in the country[7].

This project focuses on developing active learning modules in sex education for 12-year-old preteens in the sixth grade. Although the data showed that sexual relations started at 13, data collected by the Ministry of Public Health shows that those who are as young as 10 can be sexually active. Ten- to 14-years-old females account for 0.4% pregnancies country-wide [4]. The authors chose sixth graders as participants for this study because they are still studying at the primary school level and because the national curriculum requires that lessons at this grade level provide information on AIDs, risky sexual behavior, and unplanned pregnancy. This research was unique because it is rare to have an active learning method used to teach sex education at a Thai public school at the primary school level. The modules originated from brainstorming sessions with students, teachers, and parents. They use a blend of game activities, video clips, motion graphics, and discussions to prompt reflection on the effects of decisions on their future.

Sex education in Thailand began in 1978 but became part of the Basic Education Curriculum in 2008[8]. For many governments throughout the world, it is their remedy to reduce health problems resulting from adolescent sexual activity[9–13]. Chokprajakchad and Phuphaibul[5] reviewed 31 adolescent sex education interventions throughout the world. Most programs focus on delaying the first sexual intercourse experience, preventing risky sexual behaviors, and reducing teen pregnancy through awareness. Each program differed in regard to context, culture, and teaching and learning styles. About 20% of the studies focused on adolescents only, and 12% of the studies involved both adolescents and parents. Only three studies involved regular classroom teachers but none of them were in Thailand. A school-based program that is facilitated by in-school teachers is unique in Southeast Asia.

The three Thai programs included by Chokprajakchad and Phuphaibul were conducted as programs after school. The most recent project was one where 22 students received 7.5 hours of training in sex and health skills. At the end of the program, they knew significantly more about safe sex than did the control group that received the regular sex education classes [14]. In a quasi-experiment conducted in Nakhonratchasima Province, 33 fifth graders participated in a special 10-week program that included role-playing, presentations, and discussions. The article claimed a significant difference between pre-test and post-test and the control group in terms of self-efficacy, practice behavior, and social support[15]. The main section was in Thai, and the English version did not explain factors being measured. A larger quasi-experiment conducted in northern Thailand had 80 volunteers in grades 6–8 taking part in a three-day health education camp[16]. There were eight sessions lasting from one to two and a half hours. Students were split according to gender and went through a comprehensive sex awareness program. Compared to the control group's post-test result, the camp did improve overall knowledge and attitude toward sex and reproductive health, attitude toward using condoms, safe sex, and refusal to have sex. It was not as effective in getting across the disadvantages of having sex.

Many researchers support starting sex education at as early an age as possible[10,17–19]. In Thailand, sex education does start at the primary level, but the mandatory curriculum might not be that effective in providing information that students can relate to based on their own experiences. Lyttleton[20,21] stated that a “one size fits all” curriculum was not adequate for students who have different socio-economic backgrounds. Kay and colleagues[11] strongly recommend that sex education should focus on students' needs and age-appropriate information.

The authors found only one other Thai project that involved students, teachers, and parents in the planning phase[16], but the program was scheduled as an extra program, not as part of the regular class sessions. In this research, the key stakeholders were closely involved with the development of the active learning lessons, and the resulting sex education modules were implemented in the actual classroom. These two factors make this research project different from others in Thailand.

Methodology

Study design

Sex education learning units for sixth graders were developed from the input of students, parents, and teachers via the focus group discussion. The contents validity of sex education units was approved by the panel of experts with appropriateness checked using Index of Item Objective Congruence (IOC). After revising the created learning unit, the three lesson plans were implemented in three primary school classroom contexts. Finally, the effectiveness of the learning unit was studied by evaluation of sex education knowledge and sexual attitude and awareness.

The research was divided into two phases: development and implementation. The qualitative analysis from the first phase was used to develop the sex education sessions and then implemented in the classroom in the second phase. The units were based on a constructivist educational approach that stated that prior knowledge and skills should be taken into consideration when developing the active learning sessions. This is why it was necessary to involve sixth graders in the development phase, as well as act as participants in the implementation phase.

Development phase

Study procedure and participants

The participants were purposively selected from a public primary school in Samutsakorn Province. The location was chosen because it had the fifth highest number of preteen pregnancies in the country[7]. It is located outside of Bangkok metro proper, so it better represents a more typical public high school throughout the region which lacks the big city advantages of after-school tutorial programs or a heftier budget supplemented by school fees. The location is convenient enough to help the authors supervise the research project. The focus group comprised 10 sixth-grade students (one male, nine females) joined by one of their parents (two males, eight females) and nine in-service primary education teachers from the participating schools (seven males, three females).

Research instrument

The focus group was separated into three different categories: one with the parents, one with teachers, and one with the students. All groups followed a semi-structure interview, lasting for one hour per session. The questions focused on sexual problems in Thailand, especially sexually transmitted diseases, AIDS and teen pregnancy, and the teaching and learning sex education in the classroom. These are examples of the questions:

- (1) In your neighborhood near your school, when have you dealt with sexual problems with other students and what did the school do?
- (2) Why do you think sex education class is important to your students?
- (3) In sex education, how was the class taught? Did you have any learning activity? How did you evaluate your class?

- (4) Do you think sex education in this school is suitable for your children? Have you ever seen the contents of the book or talked to your children about this issue?

The separation of the groups allowed for a more open and honest conversation. For example, the teacher group said they did use illustrations and brought in more contemporary examples. The students said that lessons were taught directly from the textbook. If the students were included with the teachers, it would be unlikely they would have shared this.

Data analysis

The qualitative data were analyzed using a constant comparative method. The results were used as an input for developing the sex education modules used in the next phase. These sex education lessons were then checked for content validity by the panel of experts using the Index of IOC. of the panel comprised three sixth-grade teachers from primary school, one expert from the AIDS Access Foundation who had over 10 years of experience, and one staff member from the TeenPath Project under the Path2Health Foundation. TeenPath has worked on providing sex education for Thai adolescents since 1985. The sexual education learning unit was revised according to the experts' recommendations before applying in the implementation phase.

The results of the focus group resulted in two themes[22]:

- (A) The current situation in school and society.
- (B) Teaching and learning in sex education.

All participants agreed that students were learning from highly sexualized and unrealistic examples seen in movies, on websites, and in social media, such as from Facebook, Line, and Instagram. The participants said they felt strongly regarding sex education as being an important topic for their daily lives. These students shared that they usually learned about sex education from textbooks, although some teachers said they used human anatomy models, video clips, and current news stories as well. Students noted that school-based sex education was not enjoyable and did not help in understanding because they could not use something that was just memorized and apply it well to their lives. Both the teachers and parents thought early-age sex education could keep children safe from STIs, AIDS, and unintended pregnancy. Teachers said that they needed more media and activities to be used in their class.

Implementation phase

Study procedure and participants

Students. The participants included sixth-grade students from School A, School B, and School C. All were located in Samutsakorn Province. The authors chose this region because it had a high incidence of sex diseases, AIDS, and unplanned teenage pregnancy problems. The researchers purposively chose three schools with different sizes. With over 1000 students, School A represented a large-sized primary school. School B, having between 500 and 1000 students total, was the medium-sized institute, and School C represented small-size schools having 500 or less students. The number of participating students in Schools A, B, and C were 41, 35, and 26, respectively.

Teachers. Three participating teachers were asked to attend a training workshop lasting three days. The teachers practiced using the learning activities and materials for the three active learning sessions before being implemented into their classrooms. They acted as facilitators instead of giving a lecture and having the students passively listen.

Research instruments

Active learning lessons, media, and assessment. The three lessons each focused on one serious sexual problem: risky sexual behavior, sexually transmitted diseases (AIDS), and unplanned teenage pregnancy. They were based on what content is required by the Thai Ministry of Education's Basic Education Curriculum for sixth graders. What differed was how the issues were made more relevant to students' interests by using more interactive media, activities, and discussions. The lessons were not sections of a textbook that needed to be memorized for test purposes only.

Each lesson plan took one hour per week, so the active learning sessions required three weeks at each school. Three lessons were implemented in three primary schools in the first semester of the 2015 academic year.

Lesson 1 focused on risky sexual behavior, with the main activity being a group brainstorming session where students discuss the effect on their future if they or a partner become pregnant. The lesson started with video clips from the Thai Health Promotion Foundation and then paused for students to discuss a "what will happen" situation based on picture prompts.

In lesson 2, a water swapping activity simulated how a disease like AIDs spread. Different transparency chemicals were added into 10 cups of water. In each round, students were asked to exchange their cup. After a few rounds of swapping, the teacher performed a water test by dropping a reactor. The cup that has the active chemical turned purple. The activity represents HIV blood test. The cup that turned purple represents the state where participants were infected without any sign until after the test result.

In the last session, students simulate being pregnant by using household stuff that represented the extra weight of each trimester. The lesson was introduced to the student with a video clip of a teen mother.

The use of motion graphics was a recommendation by the focus group. Because of this, three-minute-long motion graphics were included at the end of each lesson, helping the instructor sum the key learning points.

Each lesson also includes multiple-choice pre-test and post-test to measure sex education knowledge. A 19-item sexual attitude and awareness questionnaire was given at the beginning and end of the project. It used a 5-point Likert scale, with 1 meaning strongly disagree and 5 meaning strongly agree. All three lesson plans and the sex attitude assessment were developed based on the focus group discussion and checked for validity by the expert panel.

Classroom observation and data collection. The first author observed all learning activities. The pre-test was given at the beginning of the session, and the post-test was again provided at the end. After class, the author interviewed the teacher and a couple of randomly selected students. Related documents, such as the teachers' journals and students' worksheet, were kept as part of the data-collection process.

Data analysis. The quantitative data were analyzed using the statistical software SPSS. Paired sample *t*-test was used to compare pre-test and post-test lesson scores and the measuring understanding and attitude.

The qualitative data were analyzed using a constant comparative method. It included classroom observation records, semi-structure interview, teachers' journal, and students' worksheet.

Ethical consideration

The research protocol was approved by the Mahidol University Central Institutional Review Boards (MU-CIRB) on October 4, 2015, Protocol No: MU-IRB 2013/075.0907. Study participants signed informed consent forms to indicate their willingness to take part in

this research. All names were replaced with randomly assigned identification to protect participants' privacy.

Results

A pre-test and post-test was given to measure students' knowledge level during the sex education sessions. Table I shows the results of the paired sample *t*-test.

Table I shows that the students in School A scored significantly higher on the post-test for lesson 2 ($t = 5.49, p = 0.000$) and lesson 3 ($t = 3.53, p = 0.001$), but not for lesson 1 ($t = 1.61, p = 0.115$). For School B and School C, all post-test scores were significantly higher than the pre-test scores.

The qualitative observation data confirmed that the teachers conducted the sex education according to what was planned and according to schedule. Overall, the students paid attention during the learning activities. The one aberration was the post-test at School A for lesson 1. Instead of taking the post-test just after the class in the morning, it was delayed until the afternoon session and after students returned from sports outside. This difference in post-testing protocol would explain the no significant result for this session.

Analysis of the student interviews after each session revealed that they felt the learning activities were engaging and presented in a way that they could use to relate to their lives. The activities in lesson 1 allowed them to brainstorm with their group and express their ideas and feelings. Lesson 2 made them realize that an HIV-infected person looks the same as anyone else. They understood the analogy of exchanging water that had a chemical pollutant and that it represented the risk of catching AIDs through sexual contact. They appreciated that what looks like clean and ordinary water could be contaminated and could relate that to an HIV-infected person and the need for a blood test. The students were surprised with how quickly the chemical pollutant spread, making them more open to a conversation about safe sexual activity. The activity in lesson 3 allowed them to experience the difficulty of teen pregnancy. They thoroughly enjoyed running around with bags of flour strapped to their stomach and the adolescent humor of boys pretending to give birth. They were able to relate this to consequences of an unplanned pregnancy.

The notes from the teachers' debriefing sessions helped students gain a better understanding through lesson plans involving active participation. They believed that the learning materials and activities had good potential to be continuously used in the classroom.

...The motion graphic was easy to understand and help students to brainstorm the concept map, but there was not enough time (Teacher from School B)

...The comparison between changing the water and sexual intercourse was a good analogy that engaged students to have a discussion together and stimulated their critical thinking (Teacher from School C)

School	N	Lesson plan	Mean diff.	SD	t	p-value
A	41	1	0.24	0.97	1.61	0.115
		2	1.37	1.59	5.49	0.000*
		3	0.66	1.20	3.53	0.001*
B	35	1	0.87	1.06	4.59	0.000*
		2	1.36	1.70	4.43	0.000*
		3	3.61	2.20	9.14	0.000*
C	26	1	0.96	1.31	3.74	0.001*
		2	1.42	1.47	4.92	0.000*
		3	0.96	1.97	2.49	0.020**

Table I.
Paired-sample *t*-test of pre-test and post-test score results of each sex education lesson

Notes: * Significant level $\alpha < 0.001$; ** Significant level $\alpha < 0.05$

...Most of the students were enthusiastic during the simulated pregnancy, but some boys were shy about being a pregnant woman. The creative poster activity stimulated the students' groups discuss (Teacher from School A).

The students' sexual attitude and awareness before and after the implementation of the learning unit was evaluated by using a pre-test and post-test questionnaire. The summarized results are shown in [Table II](#).

The paired samples *t*-test result showed that the students' sexual attitude and awareness significantly improved for School A ($t = 5.22, p = 0.000$) and School B ($t = 3.27, p = 0.003$). With a *p*-value of 0.054, School C came close to reaching significance but missed. This is likely because the class size at 26 was smaller than School B ($N = 35$) and for School A ($N = 41$). So, the statistical power was not enough to measure a medium difference, only a large one.

The qualitative analysis supports the fact that student' awareness and attitude increased. During the focus group interviews, the students said that the regular school sex education classes were boring as they were taught directly from the book. They also added that they had difficulty applying what was learned to their life. They only saw it as stuff that had to be memorized to pass a test. In contrast, the class observations showed that active learning elements helped engage students' interest. The interviews with the students after each lesson confirmed that students understood the central concept for each lesson, and follow-up questions showed that students were better able to absorb what was learned and relate it to their own life experience.

The scenarios presented in lesson 1 allowed them to think through the consequences of impulsive decisions. They came up with different options to avoid putting themselves into a situation that would lead to unsafe sex and possible pregnancy that would affect their health and their futures. Lesson 2 raised their awareness of the importance of safe sex. Activities in lesson 3 raised students' awareness of the issues of pregnancy, especially for male students.

In conclusion, the lesson plans were effective in helping the students develop an understanding, attitude, and awareness of sexuality. This was confirmed quantitatively and qualitatively. The learning activities and materials, especially the video clips and motion graphics, raised the students' interest. All students expressed interest, enjoyment, and enthusiasm while learning about sex with these active learning sessions. The teachers were satisfied with the effectiveness of the new class activities, and all expressed their intention to continue to use the modules for their future sex education class.

Discussion

The active elements of three sixth-grade sex education sessions were developed from the recommendations from students, parents, and teachers in the Samutsakorn Province. These are also in line with Kirby and his co-workers'[4] recommendation on developing an effective curriculum. It included developing the curriculum based on the target group's needs; including stakeholders and experts from multiple backgrounds and relating it to the community value. This was done during the development phase. The students, teachers, and parents from the focus group and the review by the three experts provided a variety of views.

School	Pre-test		Post-test		<i>T</i>	<i>p</i> -value
	Mean	SD	Mean	SD		
A	81.28	5.53	88.56	6.98	5.22	0.000*
B	82.73	6.14	87.73	6.53	3.27	0.003**
C	75.63	6.66	80.84	8.79	2.06	0.054

Notes: * Significant level $\alpha < 0.001$; ** Significant level $\alpha < 0.05$

Table II. Paired sample *t*-test of students' pre-test and post-test sexual attitude and awareness

The inclusion of parents and teachers from the local community made sure that sexual content was proper for 12-year-old students in that region. This is unlike other studies conducted earlier[5,9,11,19,23–27].

Kirby's recommendation for increasing effectiveness appeared to pay off. Except for one exception, the lesson assessments showed significant improvement of the post-test score over the pre-test. The one exception was due to a delay in assessment for the first session at the first school. So, this reflected more of an error in process rather than a lack of knowledge [4,12]. The survey in overall sexual attitude and awareness also showed a significant score improvement in the post-test scores three weeks after the pre-test was taken for School A and School B. The score for the post-test at School C showed improvement but with a *p*-value of 0.054 it missed being significantly large. This is likely because of the fact that the smaller sample size of 26 students was not sufficient to measure medium differences.

In Thailand, many organizations have tried to increase sex education, but most of these are extra programs or out-of-school curriculum that require many more hours than is normally allocated to the subject[5,11,19,24,25,28–30]. Some of these programs also have the luxury of bringing in experts. The long-term success of a sex education program includes better training for all teachers, but for most public high schools, the physical education teacher is assigned the duty. The uniqueness of this study was that it was fitted to meet the Thai Ministry of Education requirements in three one-hour sessions. As part of the research, there were three days of training, but for the classroom activities minimal training is required.

The quantitative and qualitative analysis measured significant improvement in students' knowledge and changes in attitude toward sex education. The results indicated that active learning modules based on students' background and interests are more effective than mere passive learning. The students in the focus group explained this to be a teacher lecture straight from the textbook.

Although limited in time, this study did show that participating students had positive attitude and awareness toward sexuality as did happen in other research[5,23,25,29–31]. Because more Thai adolescents are becoming sexually active earlier, sex education classes like the one piloted should next target 10-year-old students. The authors' recommendation would be to tailor lessons to fit the school context, age of students, and cultural beliefs [5,11,20,21]. The researchers hope that the development of sex education for Thai students will be continued to get the best result for our country in decreasing the sexual problems in the long run. Also, it might provide more innovative ideas for researchers and educationists in other contexts.

Implications

A more effective implementation of sex education at the primary school level requires support from top to bottom. This would include the Thai Office of the Basic Education Commission (OBEC), local school board members, school administrators, teachers, parents, and students. Priority should be given to allocating more time in the curriculum for sex education at primary schools. There appears to be a tradeoff. One more hour to sex education means one less for math, science, social science, or communications. Yet, the topic is rich enough to be used as the basis for being included as a science class, a social science class, or an economics class. More active learning modules also allow students to practice their communications and work as a team to come up with alternatives and solutions, developing those skills that will lead to academic success when studying at a university. OBEC should also encourage more training on new methods and techniques for teaching sex, using a variety of media and activities that encourage honest discussions and thoughtful reflection on the effect of sexual activity.

Mandates at the top for more time to be spent on sex education and better training of teachers would give more importance to the subject. At the same time, the local community

should help shape the lessons, starting with inputs from the students themselves. The current project was more effective because it began by using a constructivist learning approach, considering the sixth-graders background and knowledge level first. It also took the unusual approach in asking them what the issues were with the current sex education classes. The active learning modules were not overtly sexually explicit to make primary school students and their teachers uncomfortable during discussions. At the same time, models and activities could be generalized enough to give students a clear understanding of the risks and implications of sexual behavior.

Teachers are the key to using education to reduce the number of preteen pregnancies and other preteen sexual health issues. The current project proves that when interested and engaged, students gain more understanding, attitude and awareness than they would from being lectured directly from a book. Both students and teachers enjoyed the learning activities, video clips, motion graphics, and handouts. Teachers still need to adapt lessons to fit their students' background and interests. After receiving sex-related information, students also need extra guidance to be able to make the connection between what was covered in class to using it to make decisions in their own lives.

Parents are one part of the jigsaw that is often ignored. Thai culture makes talking about sex within the family awkward. Those same cultural expectations make it essential that dialog can be opened before preteen pregnancy or an untreated sex disease causes serious family issues. Asking for parental input in the process of implementing a more interactive sex education curriculum is one way to help start that family conversation. In this study, parents' feedback during the focus group provided valuable input. They were able to share their own experiences and presented their concerns about the effect of media and the web. At the same time, they become more aware of sex topics that were taught in the classroom.

Lastly, the sustainability of sex education needs cooperative hands. The Ministry of Public Health, Ministry of Education, OBEC, school board members, school administrators, teachers, and parents have to work together to improve Thai adolescents' sexuality literacy. This is a healthy combination of knowledge and experience that each has about sexual wellbeing. A more well-developed sexual literacy should provide positive feedback that gives the next generation a better chance. At a minimum, all levels need to cooperate to help fight the increasing rates of preteen pregnancy.

Limitations

Some limitations were due to the sampling method. In the classroom, there were more girls than boys. So, male participants were under-represented in the sample. Purposive sampling was used to choose a region that had a higher risk of preteen pregnancy and to choose schools that represent large, medium, and small school systems. Because the active learning sessions were developed and then pilot tested, the authors wanted to select a sample that provided rich feedback. The next research step would be to increase the sample size to increase statistical power. It would also involve using an experimental design, randomly assigning students to either an experimental or control group.

Another limitation was no retention test given to the participants after an extended period, because this was the first implementation of the newly developed active learning sessions. The focus was on gathering feedback for the next revision to the sex education modules.

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