

Students' perceptions of the use of Digital Formative Assessment tools on a Contemporary Sexuality Course at Walailak University, Thailand

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Abstract

This paper discusses a case study where digital formative assessment tools were used on a Contemporary Sexuality course at Walailak University. The purpose of the study was to investigate students' perceptions of the following tools: Kahoot, Padlet, and Poll-Everywhere. Twenty-five undergraduate students (purposive sampling) who had registered on the course in the second semester of 2017 completed a questionnaire. The three digital formative assessment tools were applied with an experiential learning (EL) approach to increase students' engagement and enhance learning outcomes. The results showed students' perceptions of using online digital tools as part of the EL approach was generally positive, with Kahoot being the most favorable application, followed by Padlet and then Poll-Everywhere. An overall evaluation of the use of digital formative assessment tools showed that the mean rating given by students on a five-point scale was 4.56 ($n=25$, $SD=0.65$). The course was therefore well received. The students found the digital tools very useful for mastering the content. Additionally, an analysis of open-ended survey responses clarified the different merits students perceived as arising from each activity. The variations provided by the experiential learning design of the course served to meet their learning needs and were experienced as fun.

Keywords: Students' perceptions; Digital Formative Assessment Tools; Contemporary Sexuality; Experiential Learning

Introduction

The use of mobile app technology has emerged as one of the fastest growing trends in contemporary education. Its use could transform the traditional classroom environment from one that is teacher centered to one that is learner centered (Drexler 2010). This mean that instructors can utilize these tools for both formal and informal assessment, enabling them to determine levels of student retention and achievement. Furthermore, students are now permitted to bring their own devices (BYOD) into the class e.g. tablet, laptops, smartphone, rendering the need for a computer lab redundant. This enables students to access online materials, discuss their work with others, and receive prompt feedback from teachers to improve their comprehension. It also provides opportunities for students to develop digital citizenship skills (Elliott 2017).

Formative assessment is necessary for teachers to evaluate a learner's progress. It is an assessment that enables teachers to modify instructions to help students achieve learning outcomes (Sağlam 2017). Cano and Ion (2016, p.34) argued that formative assessments give instructors the opportunity to “identify concepts that students are struggling to understand, skills they are having difficulty acquiring”. It enables them to discuss any misunderstandings the students may have and to discuss how to address the problem. Formative assessment includes written examples, class discussions and short quizzes in various formats. Digital formative assessment tools include: Kahoot, Padlet, and Poll-Everywhere. These tools contain multiple features in various styles that can be used for formative assessment, such as quizzes, discussion, and writing tools. (1) Kahoot (<https://kahoot.it/>) is a Web 2.0 tool that offers simple online quizzes, surveys, and discussion. The instructor can prepare questions one by one on the display screen with the assistance of Kahoot. Furthermore, they can customize quizzes by adding videos and images that can be shared with other users. (Elliott 2017). Each student needs to use his or her own mobile device to submit answers using the Internet. When they have finished the questions, the names of the top 3 students will appear on the screen. The learners can receive immediate feedback during the application to correct any misconceptions they may have (Dellos 2015. (2) Padlet (<https://padlet.com/dashboard>) is a web-based tool that allows students to

respond to a particular topic and engage in further discussion. There is also an app for mobile devices, including iOS, Androids, and Kindle. The Padlet functions like a digital bulletin board for adding hypertext links and sharing resources, allowing students to quickly access the collective knowledge of the group. Additionally, teachers can customize privacy by setting security and control features (Dunbar 2017). (3) Poll-Everywhere (<https://www.polleverywhere.com/>) is designed to be used as a resource that allows users to poll audiences live. Teachers can use this as an icebreaker where students can introduce themselves e.g. their background and interests. As well as polls the resource also provides word walls and clouds for open-ended questions (Elliott 2017).

A benefit of digital formative assessment tools is that they provide teachers with opportunities to adjust the course content, review students' understanding during the class, improve motivation, and monitor student progress. Such tools have received wider attention in the educational field as many instructors have now started integrating them into schools and universities. Several studies have shown that faculty and students from a wide range of disciplines perceive the incorporation of digital formative assessment tools into classroom instruction as fruitful. For instance, Kahoot is used as a formative assessment tool in medical education (Ismail and Mohammad 2017), Electronic Engineering (Abidin and Zaman 2017), and the teaching of Biology (Yapıcı and Karakoyun 2017). Such studies have shown that this tool is feasible, practical, and can make learning fun and enjoyable. In addition, Padlet is one of the tools most commonly used to increase student interaction in the classroom, such as in music lessons for example (Dunbar 2017).

The Contemporary Sexuality Course is a Free Elective Course offered by the School of Liberal Arts in Walailak University to all undergraduate students. This course gives students the opportunity to take very close look at the Thai cultural understandings of gender and sexuality. Topics surveyed include introduction to human sexuality, sex and gender, sexual development, love and sexual attraction, Sexuality & Relationships, HIV transmission, and sex and violence. The experiential learning approach is integrated in the course in order to link theory to practice and everyday life. As Lewis and William (1994) said by providing a popular and general

definition of experiential learning, which states that: “In its simplest form, experiential learning from experience or learning by doing experiential education first immerses learners in an experience and then encourages reflection about the experience to develop new skills, new attitudes, or new way of thinking”. (p.5) Experiential learning comprises two categories: (1) field based experience, covering co-operative education, internships, and practicing with others; and (2) classroom based learning, such as role-playing, simulations, group work, and presentations (Lewis and Williams 1994). In the Contemporary Sexuality course, an experiential learning approach including group discussions, simulations, role-play scenarios, and small group-based activities are used in this course to motivate and engage students and foster deep learning. However, some students were shy about interacting in the class, especially when relating the topic of sexuality to a real-life scenario. Digital formative assessment tools can be accompanied with collaborative activities so that all students are free to participate, and give quieter students a forum online to talk.

Rather than focusing on one particular tool, a variety of digital tools can be applied in the class when teaching. For example, Hsiung (2018) used Poll-Everywhere, Kahoot, and Padlet Socrative for in General Chemistry I and Precalculus classroom teaching to engage students and provide real time formative assessment. In Thailand, a small number of studies have focused on the use of these tools for teaching and learning. For example, Chaiyo & Nokham (2017) used Kahoot, Quizizz, and Google Forms in an engineering classroom to enhance the interaction between the teacher and students, as well as boost students’ motivation, engagement and learning. However, no previous studies have incorporated the use of such tools into an experiential learning approach to teach students in higher education. Therefore, to address this gap, this study will incorporate Kahoot, Padlet, and Poll-Everywhere into several practical activities to increase student engagement and learning Contemporary Sexuality Course at Walailak University, Thailand and to explore students’ perceptions of the use of Kahoot, Padlet, and Poll-Everywhere as digital assessment tools.

The purpose of this research was therefore to examine students’ perceptions of three different digital formative assessment tools: Kahoot, Padlet, and Poll-

Everywhere, in the Contemporary Sexuality course at the School of Liberal Arts, Walailak University. The research questions were as follows:

1. How are students' enjoyment and satisfaction affected by using Kahoot, Padlet, and Poll-Everywhere?
2. What suggestions do students have regarding the use of digital formative assessment tools?

Materials and Methods

(1) Sample

The sample comprised twenty-five students selected through purposive sampling from students enrolled in class 6 of the Contemporary Sexuality Course, Walailak University during the second semester of the 2017 academic year.

(2) Survey Questionnaire

A closed and open-ended questionnaire developed by Miyazoe (2010), was used to collect the data. This comprised three sections. The first contained several questions used to collect demographic data such as age, gender, major studied, a self-assessment of computer and mobile application expertise, and prior experience using Kahoot, Padlet, and Poll-Everywhere. The second part consisted of close-ended items for which a standard 5-point response scale was used (agree, slightly agree, not sure or no option, slightly disagree, and disagree). The participants were then asked to rank their preference regarding the three tools, with "1" being the best and "3" the worst. The third section contained an open-ended question which asked for students' suggestions regarding the use of digital formative assessment tools in the Contemporary Sexuality Course.

(3) Procedures

The research was conducted from October 2017 to December 2017 at Walailak University. The class participated in an experiential learning (EL) course design of weekly face-to-face instruction and in-class collaborative activities.

The three digital formative assessment tools were used to increase students' engagement and enhance learning outcomes in the following three lessons: "Analysis

of HIV transmission using QQR approach (Quantity of HIV and source of infection; Quality of HIV; Route of transmission)", "Sexuality & Relationships", and "Violence".

The steps used in experiential learning when applying digital formative assessment tools were as follows (see Figure 1):

Step 1. Introduce learning objectives for each topic and recap students' prior knowledge.

Step 2. For each topic, students were required to carry out various activities in a group or community. These included simulations, case studies, role-playing, informal small groups, and other activities. These were designed to enhance students' critical thinking, problem-solving, and communication skills (do activity) (Figure 2-Figure 3).

Step 3. After completing the activities, the students were asked to share their experiences and reflect on the lesson using Poll-Everywhere. Quizzes and questions on the course for each week were presented to the students through the Kahoot! application (share and reflect). (Figure 4)

Step 4. Students were asked to link their experience to real-world examples and apply what was learned to a similar or different situation. They then shared their answers using Padlet (apply) (Figure 4)

Step 5 Finally, students were required to complete the exercise sheet at the end of the class.

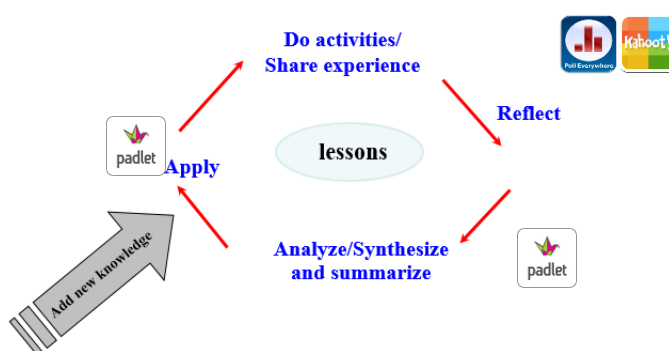


Figure 1. Application of Experiential learning cycle using Kahoot, Poll-Everywhere, and Padlet



Figure 2. In-class activities (simulation of HIV transmission by exchanging water)



Figure 3. In-class activities (collaborative learning)

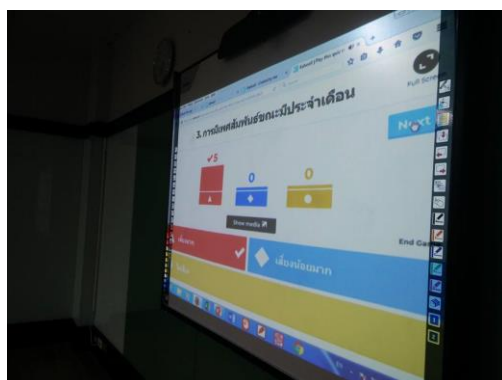


Figure 4. Kahoot used in the classroom



Figure 4. Padlet used in the classroom

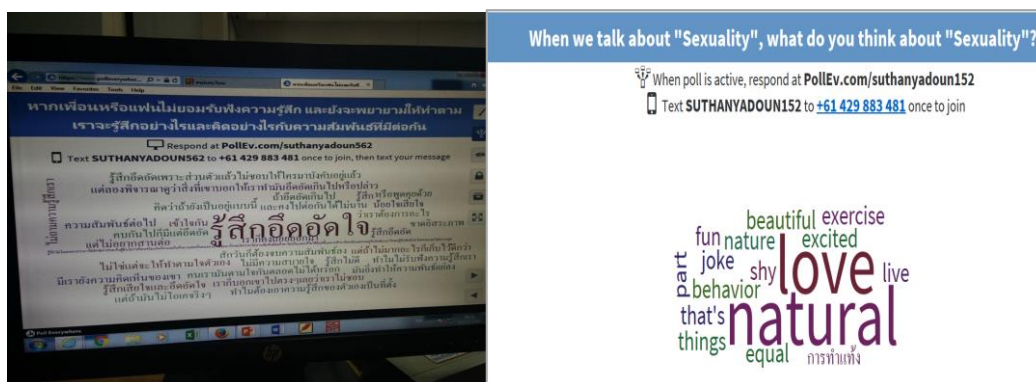


Figure 4. Poll-Everywhere used in the classroom

(4) Data analysis

Using SPSS, descriptive statistics were calculated to determine the means and standard deviations of the sample. Content analysis was then used to analyze the qualitative data.

Results

This section presents students' perceptions of the three different digital formative assessments tools used in the Contemporary Sexuality course. In this analysis, we considered students' engagement, enjoyment, satisfaction, and their ranking of each tool.

Demographic data

Out of 25 students, 4 respondents were male and 21 females, between the ages of 19 and 22 years. All were majoring in various disciplinary fields, such as ASEAN Studies, Accountancy, Information Technology, Business Administration Program in Tourism and Hotel, and Political Science. A self-reported assessment of computer and mobile application skills was conducted using a five-point rating scale. Overall, students reported moderate levels of computer skills (Mean=3.44, S.D.=0.82) and assessed themselves as being highly skilled users of mobile applications (Mean=3.72, S.D.=0.74).

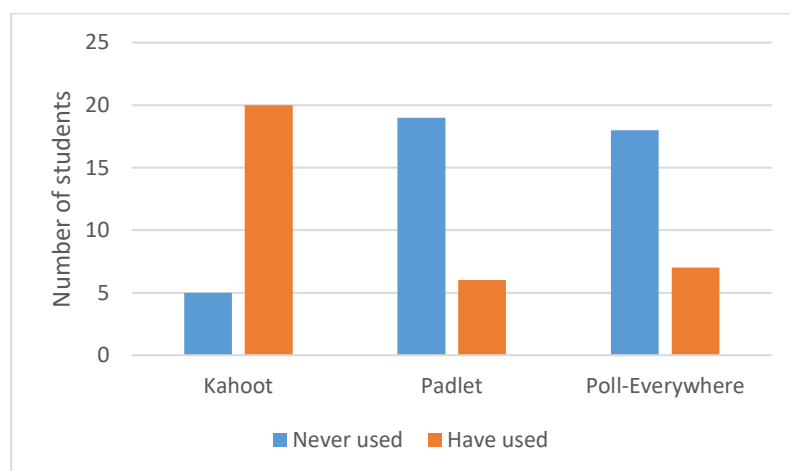


Figure 5. A self-reported assessment of experience using three digital formative assessment tools prior to attending the Contemporary Sexuality course (N=25)

Figure 5 shows the self-reported assessment of students' experience using the three digital formative assessment tools prior to attending the course. The results show that most students have used Kahoot (80%), followed by Padlet (76%), and Poll-Everywhere (72%) respectively.

In line with the research objectives, the main results are presented in two parts.

RQ1: Perceived Enjoyment, Usefulness, and Satisfaction

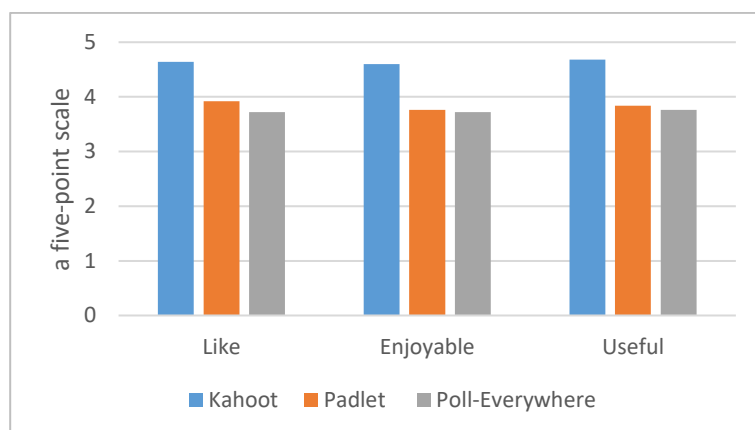


Figure 6. Evaluation of Kahoot, Padlet, and Poll-Everywhere using a five-point scale (N=25)

Students were asked to rate their favorite digital formative assessment tools based on enjoyment, usefulness, and satisfaction. Most students preferred the Kahoot, followed by Padlet and then Poll-Everywhere (see Figure 6). An overall evaluation of the use of digital formative assessment tools showed that the mean rating given by students on a five-point scale was 4.56 (n=25, SD=0.65).

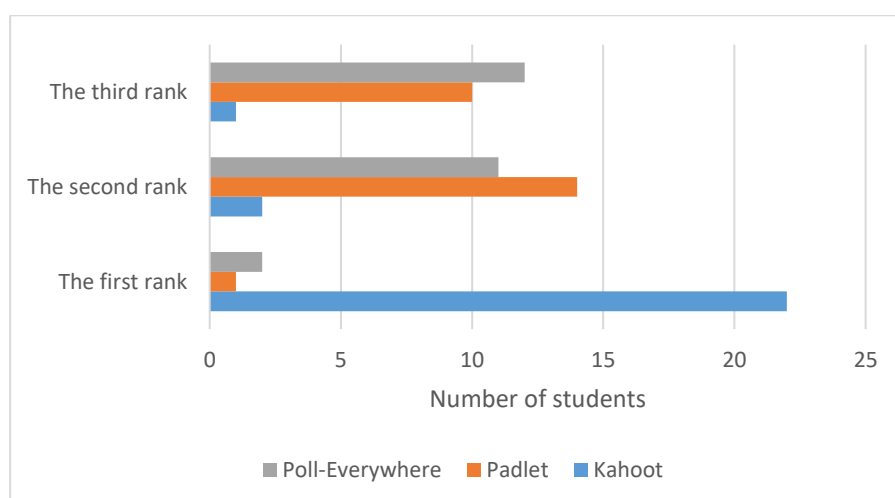


Figure 7. Ranking of Kahoot, Padlet, Poll-Everywhere using a 3-point scale from 1 (like most) to 3 (like least) (N=25)

Figure 7 shows that, like Figure 6, students prefer Kahoot the most, followed by Padlet and then Poll-Everywhere.

RQ2: Students' suggestions regarding the use of Digital Formative Assessment Tools

When students' views on the use of digital formative assessment tools in Contemporary Sexuality teaching were examined, most students felt that it was more appropriate to ask questions using such applications. One student (P25) stated that "There should be more questions in Kahoot, Padlet, or Poll-Everywhere. It's a lot of fun and some students like to type answers rather than talk in the class". Nineteen students felt that using such tools in the class helped them to understand the content of the lesson. One student (P23) said "It's great fun, useful and I like to play more". Some students thought that providing more interesting questions related to real life situations, as well as visual questions use Kahoot, would be likely to increase the permanence of learning on this topic. For instance, one student (P22) said "more questions related to real cases. It's more interesting" Additionally, some students argued that Kahoot should be applied in all courses and that more questions should be directed within the scope of the application.

Discussion

This study investigated students' perceptions of three different digital formative assessments tools: Kahoot, Padlet, and Poll-Everywhere., used on the Contemporary Sexuality course in the School of Liberal Arts, Walailak University. The data showed that students gave positive responses toward the use of such tools, particularly Kahoot. They found it an enjoyable challenge to work in teams and come up with the correct answer. These findings are consistent with those of Chaiya and Nokham (2017) who found that students learned from completing quizzes using Kahoot, Quizizz, and Google Form. There are significant differences, however, in levels of concentration, engagement, enjoyment, motivation, and satisfaction. Kahoot and Quizzizz offered several advantages over Google Forms when used in the classroom. For example, the

lecturers can use Kahoot for game-play (gamification) strategies and encouraging discussion in each question. This allow lectures provide students with timely feedback when students give wrong answers. This finding was consistent with earlier research by Hsiung (2018) who explored the use of Poll-Everywhere, Kahoot, Padlet, and Socrative for formative assessment in General Chemistry I and Precalculus classroom teaching. Overall, the results showed that Kahoot is the students' preferred response system (SRS). Most students commented that Kahoot is fun, engaging, and competitive.

Conclusions

In the digital age, progressive learning is supported by mobile app technology. Digital formative assessment tools can enhance student motivation as well as achievement. Instructors should therefore actively use mobile app technology to encourage student engagement and problem solving in the teaching process, thus improving students' learning outcomes. Kahoot, Padlet and Poll-Everywhere are excellent digital formative assessment tools that can help students to learn in the classroom. They are convenient to use, simple, and powerful in supporting both teaching and learning. Future classes should therefore integrate these tools into classroom-based assessment practices.

Based on these findings, the following recommendations can be proposed;

- With the help of digital formative assessment tools, lessons in which students feel ashamed or embarrassed talking about sexuality can be made more entertaining. This is likely to increase students' motivation.
- Kahoot, Padlet and Poll-Everywhere should be used for different subjects through different applications, and their effects then examined and evaluated.

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Conflicts of Interest: The author declares no conflict of interest.

Appendix A: Survey on Perceptions of the use of digital formative assessment tools
(literally translate version from Thai and developed by Miyazoe (2010))

2017 end-of-semester questionnaire

Anonymous

There are three sections in total, and the majority of them ask you to circle and item. It will take about 15 minutes of your time. Your answers will not affect your final grade in this course.

For better statistical validity, when the questions ask you to circle and item, please answer as many questions as possible (missing items can lower the validity). The open-ended questions are optional. Thank you for your time.

Section I: There are questions about yourself. Please circle the item or fill in the appropriate number.

Gender	Male Female
Age	Years old (in whole number)
Academic year	Year
How would you rate your computer skill level?	Not at all 1 2 3 4 5 Highly capable
How would you rate your mobile application skill level?	Not at all 1 2 3 4 5 Highly capable

Have you ever used Kahoot before?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Have you ever used Padlet before?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Have you ever used Poll-Everywhere before?	<input type="checkbox"/> Yes <input type="checkbox"/> No

Section II: Below are questions about the digital formative assessment tools: Kahoot, Padlet, and Poll-Everywhere that were introduced in the Contemporary Sexuality course.

Q.1: Evaluate Kahoot, Padlet, and Poll-everywhere on the following five-point scales.

Kahoot

Dislike	1—2—3—4—5	Like
Boring	1—2—3—4—5	Like
Not useful	1—2—3—4—5	Like

Padlet

Dislike	1—2—3—4—5	Like
Boring	1—2—3—4—5	Like
Not useful	1—2—3—4—5	Like

Poll-everywhere

Dislike	1—2—3—4—5	Like
Boring	1—2—3—4—5	Like

Not useful 1—2—3—4—5 Like

Q.2 Of the Kahoot, Padlet, and Poll-Everywhere, which activities do you like most?
Rank them using the number 1 (like most) –3 (like least).

Example:

Kahoot	1
Padlet	2
Poll-Everywhere	3

Your answer:

Kahoot	
Padlet	
Poll-Everywhere	

Q.3 **Important:** as a whole, the Contemporary Sexuality Course taught by Author was:

Not good 1—2—3—4—5 Good

Section III: Open-ended questions

Do you have any other comments about Kahoot, Padlet, and Poll-Everywhere?

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Regarding Kahoot, Padlet, and Poll-Everywhere, if you have any ideas for how to better use them for the Contemporary Sexuality course, please write them here.

.....

Please comment on how we could further improve the Contemporary Sexuality Course, experiential based learning approach.

.....

The results of this questionnaire might be published at conferences and/or in academic journals. In such cases, only the statistical data or the parts of your

answers in open-ended questions will be published, and there will be no way that the readers and/or the audience could determine your identity.

If you do not provide your consent on the following form, the results of this survey will be used only for course improvements. Your agreeing or disagreeing to the consent request will never have any effect on your final grade.

I hereby
agree disagree
(circle one)

that my answers may be used as part of the data and published.

Your response will be valuable for improving my future course management. Thank you very much for your cooperation.

Person in charge: Suthanya Doung-in

Appendix B: The example questions in Kahoot, Padlet, and Poll-Everywhere (literally translate version from Thai)

An example students' reflection task in Padlet

What have you learned from activities? How to apply this knowledge in your daily life?

Example quizzes in Kahoot (Partly from total 20 questions)

Question	Choices (the level of risk behavior)
Infants breastfeeding mothers living with HIV/AIDS	<input type="checkbox"/> no risk <input type="checkbox"/> very low risk <input type="checkbox"/> moderate risk <input type="checkbox"/> high risk
Using a nail scissor or razor with PLWHA (People living with HIV/AIDS)	<input type="checkbox"/> no risk <input type="checkbox"/> very low risk <input type="checkbox"/> moderate risk <input type="checkbox"/> high risk
Anal sex without using condom	<input type="checkbox"/> no risk <input type="checkbox"/> very low risk <input type="checkbox"/> moderate risk <input type="checkbox"/> high risk
Sexual intercourse with PLWHA during menstruation	<input type="checkbox"/> no risk <input type="checkbox"/> very low risk <input type="checkbox"/> moderate risk <input type="checkbox"/> high risk
Kissing PLWHA	<input type="checkbox"/> no risk <input type="checkbox"/> very low risk

Question	Choices (the level of risk behavior)
	<input type="checkbox"/> moderate risk <input type="checkbox"/> high risk
Unprotected sex	<input type="checkbox"/> no risk <input type="checkbox"/> very low risk <input type="checkbox"/> moderate risk <input type="checkbox"/> high risk

Example open-ended questions in Poll-Everywhere

- When we talk about "Sexuality", what do you think about " Sexuality "?
- When we talk about "Violence", what do you think about " Violence "?
- If your friend/boyfriend/girlfriend does not listen to your opinions or forces you to do something that you are not interested in doing, how do you feel?
And what do you think about relationships?

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