

The Educational Efficacy of a Values-based Online Tool in a Public Health Ethics Course

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Abstract

Purpose: The purpose of this study was to assess the educational efficacy of an online software decision-making program, The Values Exchange. While ethics is a vital aspect of educating public health professionals, it is both difficult to teach and assess. There is a need to identify best practices in the pedagogy of public health ethics and in the teaching methodologies that enhance student learning and engagement in both theoretical and practical applications of ethical concepts. **Method:** Ten students enrolled in a graduate level public health ethics course completed a survey and participated in a focus group about the efficacy of the Values Exchange upon completion of the five-week course. Educational efficacy was identified as the effect on student awareness of their thought process, engagement, satisfaction, and usability of the tool. Descriptive statistics and a priori qualitative thematic analysis were used to interpret the data. **Results:** Students reported high levels of increased awareness of their thought process, engagement, satisfaction, and usability after using the Values Exchange. Seven themes were identified that related to the educational efficacy constructs: (1) thoughtful decision making, (2) considering other viewpoints, (3) novelty of the program, (4) enhanced curiosity, (5) climate of respect, (6) reluctance and concerns, and (7) organization. Students positively evaluated the Values Exchange and noted an improved learning experience as a result of using the tool. **Conclusions:** This small scale study demonstrated the potential of the Values Exchange as an innovative tool to enhance student understanding of public health ethics and the complexity of decision making in challenging situations. Future studies should continue to assess the efficacy of the program with larger, more diverse populations.

Keywords: Public Health, Ethics, Pedagogy

INTRODUCTION

There has been a growing interest in developing curricula about public health ethics and providing education on ethics and scientific integrity to undergraduate and graduate students enrolled in public health programs (Coughlin, 2009). The widespread acceptance that ethics is a vital aspect of educating health professionals and the expressed desire of students to engage in ethical issues in the field that they choose highlights the need to develop effective pedagogical skills and methodologies

to teach public health ethics (Tulchinsky, Jennings, & Veihbeck, 2015). Despite this need, few studies have examined the frequency and nature of ethics training among public health programs in the United States, with one study finding only half of accredited schools of public health require coursework in this area (Lee, Wright, & Semaan, 2013). Although the number of accredited schools of public health in the United States has increased every year since 1996, the proportion of schools that require courses in ethics has remained stabled or decreased slightly (Coughlin, Katz, & Mattison,

1999; Lee et al., 2013). Researchers have shown that there is a general acceptance that teaching and assessing ethics in the curriculum is difficult and often times theoretically incoherent (Potter, 2015). This highlights the need to identify best practices in public health ethics pedagogy.

The courses in ethics that are taught in the public health curriculum vary greatly in content, depth, and approach taken (Campbell, Chin, & Voo, 2007). For example, one course may focus on a predominantly theoretical perspective whereas another may address more practical application of ethics (Goldie, Schwartz, McConnachie, & Morrison, 2002). In either case, limitations exist. The approach of ethics education based on knowledge and application of traditional ethical theories presents a theory-practice gap and students often find it difficult to apply this knowledge to real situations in practice (van der Burg & van de Poel, 2005). The approach of evidence-informed practice of applying the best available, current, valid, and relevant evidence in conjunction with the preferences of those involved also has its limitations due to the social and political nature of public health. Carter et al. (2011) provides a pointed example of a problem for evidence-informed public health: the absence of evidence. Oftentimes, there is evidence that something should be done (e.g., needs assessment), but there is rarely evidence regarding what should be done (e.g., the effectiveness of a program) or how to do it (e.g., evaluation of the process) (Brownson, Fielding, & Marylahn, 2009).

While the fundamental knowledge, theoretical ethical systems of reasoning, and evidence-informed practices are integral to public health ethics education, new approaches are needed that give students the opportunity to understand ethics in an engaging and meaningful way that allows them to explore the gap between evidence and practice and to prepare them for the complex world of decision making in public health with an understanding of the various factors at play. One approach to achieve this is to engage with the values implicit in both evidential and ethical systems of reasoning.

Values Based Decision Making

Values-based theory is a philosophical framework to understand the process of decision making in the context of evidence and values. The values we hold are the things that are

important to us. The visibility of values when faced with challenging situations isn't always clear and the emphasis on decision making is often evidence-based (Dickenson & Vineis, 2002). Values based decision making should not be thought of as being in conflict with evidence-based decision making. Instead, they should work together as a basis for good decision making. As Fulford (2004) points out, values and evidence are "the two feet on which all decision in health (and any other context) stand" (p.209). Thus, an important aspect of ethics education is that decision making should be viewed as a process-oriented approach that recognizes that decisions are influenced by many factors, including evidence, and that in many instances, there will not be a 'correct' answer.

Public health ethics is a discipline in which complex and sometimes conflicting values are in play. The discipline of ethics contains several competing and well-articulated systems of reasoning, such as utilitarianism, deontology, social contract theory, and virtue theory (Kerridge, Lowe, & Stewart, 2009). It is relatively easy to notice values when they are in clear conflict, yet it is assumed that values are shared when there is no apparent conflict (Petrova, Dale, & Fulford, 2006). Both public health professionals and students need to be more aware of the role of values and recognize the influences of their own values, as well as the values of those with whom they are working. Engaging with the values implicit in the evidence and the system of reasoning, as well as those values held by the individual may help health professionals to arrive at decisions and provides the best possible outcome (Hunink et al., 2014). In this paper, we explore the efficacy of an online software decision making program, The Values Exchange, as an educational tool to elicit values and their role in decision-making to enhance student understanding of public health ethics.

The Values Exchange

The Values Exchange (Vx) is a web-based educational tool that facilitates values transparency when making decisions (Seedhouse, 2009). According to Seedhouse (2005), "all decisions are a balance of evidence and values. Obviously we should regard values at least equally important as evidence" (p.23).

An increasing number of universities, schools, and health care institutions,

internationally, have used the Vx as a teaching and assessment tool (The Values Exchange, 2016). The Vx provides a unique environment for users to integrate both evidence and values in their decision making and offers authentic opportunities to explore and reflect upon the complexity of decision making through practice-based scenarios. This process-oriented approach, based on Seedhouse's (2009) values based theory, adopts the view that a good decision is one that can be robustly justified, rather than a pre-prescribed right or wrong answer. The structure of the Vx incorporates traditional theoretical ethical approaches in a way that students with little to no knowledge of ethics can understand as the VX provides the framework upon which students may annotate.

The Vx uses a series of interactive screens to facilitate decision-making in the context of ethical analysis. The user is first presented with an ethically challenging practice-based scenario and a proposal for its resolution (see figure 1). Users are then asked to take a position of agreement or disagreement with this proposal and to justify their decision. Users proceed to identify their reactions and reasons for taking this position using an interactive ring screen and the ethical grid, which are based on the philosophical frameworks: the Rings of Uncertainty and the Ethical Grid (Seedhouse, 2009) (see figures 2, 3, 4).

Once completed, users can access reports that summarize their own responses and the responses of other respondents to explore the underlying values that were present in the decision making process of each user (see figure 5). Previous authors have indicated that the Vx has the potential to add significant value to student learning in health professionals (Godbold & Lees, 2015; Godbold & Lees, 2013; Robb, Wells, & Goodyear-Smith, 2012).

Graduate Level Ethics Course

The Vx was used as a learning modality in a graduate level public health ethics course that met three days per week for three hours each day over the course of a 5-week period. As an elective in the Health Education and Promotion graduate degree program at a small university in the Mid-Atlantic, the course was designed to introduce students to the major ethical theories and the field of public health ethics. During the first class meeting of each week course concepts were introduced and were delivered

using both lecture and active-learning format. These concepts included an overview of relevant ethical theories, such as utilitarianism and deontology, as well as frameworks for decision-making, such as the values-based and principle-based frameworks. Each week, a specific issue in public health was addressed, such as screening and immunizations, and relevant content was delivered to students. The second class meeting of the week used the Vx and there was not a formal class meeting. Students were given an ethically challenging case study proposal related to the public health issue addressed that week and a deadline to respond. The third class meeting of the week was largely focused on interpreting the case study results and integrating course concepts into practical applications.

Students were asked to use the Vx and respond to a case study 3 times during the 5-week course. All students were trained how to use the Vx during week one, led by the lead instructor. This session included an overview of the program, registering and making a profile for the program, how to complete a case study, and how to interpret the results. Vx case studies were given during weeks 2, 3, and 4 and students were asked to respond to the case study during a specified time period. Cases were derived from ethically challenging and well-known public health ethics areas, including public health policy and public health funding (Hunting & Gleason, 2012).

METHODS

Study Design

This study took place at the end of a five-week summer graduate level public health ethics course at a private, Mid-Atlantic University from May to June 2014. A descriptive case study methodology was used to describe the experiences of students who had extensively used the Vx decision-making software program. Ten students, all enrolled in the Master of Science Health Education and Promotion degree program, volunteered to completed a short survey and participate in a focus group style interview upon completion of the course to provide feedback on the potential of the Vx as an educational tool in ethics education for health professionals. These 10 students comprised the entirety of the ethics class. Approval of the Institutional Review Board for the University was sought and gained for this study.

The aim of this study was to explore the efficacy of an online software decision making program, The Values Exchange (Vx), as an educational tool to elicit values and their role in decision-making to enhance student understanding of public health ethics. This study represents the first of its kind to evaluate the efficacy of the Vx as an educational tool in the context of public health ethics.

Data Collection and Analysis

A research assistant administered a short survey to students and moderated a focus group after the last class meeting of the course. All participants were given a description of the study and written consent was obtained before taking part in the study. The survey included a brief demographic section and included 10 statements that addressed four constructs regarding the educational efficacy of the Vx: student awareness of the thought process, student engagement, student satisfaction, and usability. Student awareness was defined as the recognition of the mental processing that leads to the selection of one among several actions (Coppin, 2014). Student engagement was defined as the effort and involvement of the student in educationally effective practices in and outside of the classroom (Harper & Quayle, 2014). Student satisfaction was defined as the level of enjoyment and interest in the Vx (Bradford, 2011). Lastly, usability was defined as the functionality and ease of use of the Vx (ISO 9241-11, 1998). The survey used a Likert-scale and asked students to strongly disagree (1), disagree (2), neutral (3), agree (4), or strongly agree (5) with 10 statements (see the appendix for a sample of the survey questions).

A focus group interview was held immediately upon completion of the survey to gain an in-depth understanding of the student experience using the Vx. A research assistant unknown to the students, trained in focus group interviewing techniques, moderated the session and took field notes. The focus group lasted approximately 60 minutes and was held on campus. A semi-structured questioning route was used and students were asked guiding questions by the moderator. Focus group questions addressed four constructs: 1) the effect of the Vx on student awareness of the thought process, 2) the effect of the Vx on student engagement in the course, 3) the effect of the Vx on student satisfaction with the learning experience, and 4) the usability of the

Vx. The focus group was audiotaped and tapes were transcribed verbatim by the research assistant. In order to ensure participant confidentiality, the research assistant assigned a pseudonym to each participant to de-identify responses. The lead researcher reviewed all transcriptions for accuracy. A deductive approach to data analysis was used as the structure of initial codes were defined using the four constructs of educational efficacy before the line-by-line review of the data. This approach is known to help researchers integrate concepts already well known in the literature (Bradley, Curry, & Devers, 2007). A priori thematic analysis was conducted by the lead researcher to identify examples in the data that fit the presupposed themes.

RESULTS

Ten students enrolled in a graduate course in public health ethics participated in this study. The majority of students were female (N=9) and students varied in age from 23-60 years old. Ninety percent of the students reported they never had taken a course in ethics, either at the graduate or undergraduate level. Descriptive statistics were used to interpret the survey results. As shown in Table 1, the perceived educational efficacy of the Vx was deemed to be quite high by students.

Four codes were used to identify themes within the focus group data: student awareness of their thought process, student engagement, student satisfaction, and usability. Several themes emerged for each construct. A description of each theme and representative quotes are presented below.

Student Awareness

The construct of student awareness was defined as the recognition of the mental processing that leads to the selection of one among several actions (Coppin, 2014). Two themes emerged from the data pertaining to student awareness: Thoughtful Decision Making and Considering Other Viewpoints. Aspects related to the decision making process and the experience of that process for students were identified as the theme labeled Thoughtful Decision Making. Several students made reference to the application of course concepts when using the Vx to make a decision on a case study. For example, when asked about the experience of responding to a case study using

the Vx, one student stated, "It challenged me to think a little deeper than I normally would." Another student added, "The Values Exchange allowed me to think through and critically think through everything and process everything." Most students agreed that the Vx challenged their thinking and that the prompts in the program created a more thoughtful decision. One student said, "I think the prompts help because it makes you think about all the aspects of the case." Other comments from students related to this highlighted the Vx breakdown of screens and organization of questions in order to answer a case study.

The other theme identified under the student awareness construct was labeled Considering Other Viewpoints. Throughout the focus group interview, students mentioned the value of reading others' perspectives and seeing the case through a different lens. As mentioned previously, ethical theories can be abstract and having the opportunity to view the application of theory in a novel way presented an enriched means to view course concepts. One student said that seeing how other students responded was, "...more of an 'aha!', I didn't think about that, that's a good idea. Or that's a different perspective." Another student stated that using the Vx, "...really helped me further understand where I was coming from, where other people were coming from, and I felt I could have better interactions." Several students reported that they liked the online environment as a means to respond to case studies. One student highlighted this by stating, "it's nice where you have your viewpoint but you're able to read the other comments without having to think about a rebuttal or a statement to say right back where you would if you were live ..." Another student mentioned, "... with the online program, you can take the time to actually think about what you are saying, go back and research it if you want, and come back to it."

Student Engagement

The construct of student engagement was defined as the effort and involvement of the student in educationally effective practices in and outside of the classroom (Harper & Quaye, 2014). Two themes emerged from the data pertaining to student engagement: Iterative Thought Process and Enhanced Curiosity.

The theme of Iterative Thought Process was defined as the ability of the program to produce

new ways to think about a concept and issue. Students identified that using the Vx to respond to a case study often elicited an unexpected shift in their thought process and that the program was helpful in fully forming their decision making. For example, one student reported that using the program "questions your thoughts." Another student expanded upon this notion, "I did like the section where you choose your emotion ... where you said it scares me or I feel uneasy about this or I feel confused. I didn't think about it until it asked because that is kind of sometimes how you felt, so it was interesting." Students noted they did not initially understand why the Vx included so many prompts to consider, but could see the value of them in the decision making process. A student said, "I think the prompts help because it makes you think about all the aspects from rights, hopes, fears and because it helped me think through the case."

The second theme that emerged under the construct of student engagement was labeled Enhancing Curiosity. Students reported that using the Vx piqued their interest in the case study concepts. For example, one student noted, "I felt like it made me want to go and read more. I was interested in the doing (the case study) and made me think, oh I gotta look more into that – I don't know enough." While students were provided with course materials in class lecture sessions, they mentioned that using the Vx to respond to the case study motivated them to search for in-depth materials on the concept. One student said, "...that motivated me to do some extra reading."

Student Satisfaction

The construct of student satisfaction was defined as the level of enjoyment and interest in the Vx (Bradford, 2011). The main theme that emerged from this construct was the establishment of a climate of respect. Many of the students reported they enjoyed using the Vx as part of the course because it allowed them the opportunity to view various perspectives in a productive and educational way. For example, one student stated, "I was able to discuss openly different opinions and respecting other points of view and understanding the other side too." Another student noted on the program, "I thought it was valuable and I could definitely take away viewing things from other people's points of view, which isn't easy, but it's definitely necessary." Students noted that they felt using

the Vx was more a more effective learning experience than being presented with a case study in class or on their own.

Two students who identified themselves as English as a Second Language learners mentioned that they felt using the Vx helped them understand course content and discussions in a way that they had not experienced before. As one student reported, "I think using this tool is very useful. You can even use this for ESL (English as a Second Language) programs because we read better than you know like, we read better than making a critical conversation and yeah, I understand people's ideas more when I read before class."

Usability

The construct of usability was defined as the functionality and ease of use of the Vx program (ISO 9241-11, 1998). Two themes emerged from this construct: Reluctance and Concerns and Organization.

Many students reported that they were reluctant to use an online software program and had concerns about having to use the Vx as a supplemental learning tool. For example, one student revealed, "At first I kind of thought of it like, oh my gosh I'm going to have to go to this website every week? It's just gonna be another thing I have to do." Students reported that they initially were apprehensive about the Vx website and format. One student said, "...the interface of the homepage was kind of overwhelming for me." Another student made a comment about the graphics on the webpage, "Just looking at it with all those imagines was kind of overwhelming."

Despite these initial concerns, students conveyed that the program was intuitive and that they felt comfortable with the tool relatively quickly. The theme of organization refers to the appreciation of the structure of the Vx as it assists a student to respond to a case study. One student said, "it taught me to organize my thinking. I find a lot of times I'll make lists and things like that but it kind of did it for me." Another student noted that despite the busy graphics, "without (the program) I would not have been able to make a decision. I would have been all over the place." Overall, students articulated that the manner in which the Vx assisted them in completing the case study was helpful and easy to use.

CONCLUSIONS

In this paper, we explored the efficacy of the Values Exchange (Vx) online software decision making program as an educational tool to elicit values and their role in decision-making to enhance student understanding of public health ethics. The four constructs used to assess the efficacy of this tool, the effect of using the Vx on student awareness of their thought process, engagement, satisfaction, and usability of the program, were assessed using a short survey and focus group interview. Both the descriptive statistics and thematic analysis of data indicated that the Vx demonstrated high levels of enhanced student awareness of their thought process, engagement, satisfaction, and usability. These findings are similar to those found by Godbold and Lees (2013; 2015), where health professionals, using the Vx to work through an ethically complex case from health care practice, reported the program to be an engaging way of understanding complexity within decision making, encouraged thoughtful reflection, and promoted the recognition of the integral role that values play in decision making.

Students reported that the use of the Vx enhanced their awareness of their thought processes when engaged in the decision making process. The structure of the course was designed for the Vx to supplement the content presented in the classroom and assigned readings and for students to have an opportunity to apply these concepts and then reflect upon them. The most common way this was achieved was through the ability of the Vx to lead students through a decision making process that elicited thoughtful responses that included critical thinking and identification of values when responding to a case study. In addition, students commented that the Vx allowed them to consider other viewpoints in a way that the traditional classroom may not have been able to achieve. Students appreciated the opportunity to see the other side of the case study and the values at play with differing points of view.

Student engagement is considered a key indicator of student interest and the efficacy of pedagogical techniques. It was apparent that the Vx enhanced student engagement in course topics and in the decision making process of both the individual student and others. Students noted that they were eager to participate in the Vx case studies each week and that the process

of this participation encouraged a curiosity for more information and independent learning of both the intellectual and social understanding of the case study. These findings are aligned with previous research on the Vx regarding increased student engagement with course content (Godbold & Lees, 2013; 2015). With future use of the Vx, a recommended list of additional readings can be added to the case study in order to promote and support students seeking more information. Another way of supporting student engagement would be to have students find additional information and incorporate these findings into the classroom discussion. The Vx offers the opportunity to respond to other students' responses through a comment feature, including rebutting or posing further questions. This function should be incorporated when using the Vx as it allows for deeper learning and engagement.

In addition to the educational aspects of the course, student satisfaction was an area that was explored in this study in order to gauge student enjoyment and interest when using the Vx program as part of their learning experience. Students reported that they were satisfied with the program and commented that it facilitated a climate of respect, especially when addressing controversial issues in public health. Students noted that they were more open to other viewpoints by using the Vx and instead of taking a defensive stance, they were able to understand other views in the context of the underlying values driving these views. Obtaining an appreciation for other viewpoints is a valuable asset, especially in the healthcare professions to enhance the interprofessional approach to care.

Previous research on the Vx recognized the benefit of using an online platform with diverse populations (Robb et al., 2012). An interesting finding of this study were comments that the Vx mitigated the cultural barriers associated with misunderstandings through having the opportunity to express viewpoints in writing, rather than through verbal communication. In addition, it was apparent that the identification of the underlying and shared values that affect decisions gave students insight into ethical decision making in the context of evidence and real life applications.

Finally, the usability of the Vx was explored. Overall, students reported that the Vx was

organized in a structured way that assisted the decision-making process and that the program was easy to use. It is worth noting that students initially were hesitant to use an online software program in the traditional classroom setting. This was an unexpected finding as web-based educational technology is pervasive in many higher education settings. This finding was also insightful as it demonstrated the need for a more thorough training session for students on navigating and using the Vx in future course use in order to increase student comfort and expedite meaningful use of the program.

Overall, the identified themes reflected a high level of efficacy of the Vx as an educational tool. The Vx allowed students to identify the values implicit in both evidential and ethical systems of reasoning and explore how these values presented themselves in challenging ethical situations. This deeper understanding of the values that underpin decision making in public health offers a way to mitigate the evidence-practice gap that exists in ethics education. The critiques of the Vx were limited with most addressing the discomfort of learning a new program, rather than that of the substance of the program. In short, students liked the Vx and expressed an enhanced learning experience from using the program in class. In addition, all students who participated in the study recommended that the Vx be used in future classes.

RECOMMENDATIONS

The focus group format is a valuable exploratory research method that can offer insight into relatively new phenomena (Stewart & Shamdasani, 2014). Yet, there are several limitations of this study that should be noted. First, the small number of participants in this study and the small male representation presented a limitation to the generalizability of the findings. The use of a quantitative survey attempted to add to the exploratory nature of the research as very few studies have assessed the value of the Vx as an educational tool (Godbold & Lees, 2013; Lees & Godbold, 2012; Robb, et al., 2012). Another limitation of this study was the use of a convenience sample and the results may have been biased in favor of the overall course experience. In order to minimize social desirability bias, a research assistant unknown to students conducted the focus group and de-identified participants in the transcription of the

data. While these limitations exist, the findings of this small scale study indicate that the Vx has the potential to facilitate an engaging and reflective educational experience for students.

In conclusion, this study of the potential of the Values Exchange (Vx) Decision Making Software as an educational tool in a public health ethics course demonstrated high levels of enhanced student awareness of their thought process, engagement, satisfaction, and usability. The Vx offers an innovative way to enhance student understanding of the complexity of decision making in challenging situations in public health and can serve as a conduit to explore ways to negotiate decisions with others by identifying the evidence and underlying values that drive decisions. More research utilizing a larger sample and more precise quantitative data should follow to confirm and extrapolate on these initial findings.

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Figure 1. Case Information and Proposal



Should HPV Vaccine Be Required for School Entry

School immunization laws were first established to control outbreaks of smallpox and have subsequently been used to avoid epidemics of vaccine-preventable contagious diseases, such as measles, whooping cough and polio. Currently, all 50 states have school immunization laws—although there are differences in what may be required in different states. States require vaccines because they have a responsibility to protect both individuals and the entire population of their state.

Vaccine requirements for school entry help ensure that most people are protected through immunization. Because contagious diseases spread among susceptible people (those who have not been immunized and the small percentage of people for whom the vaccine was not fully effective), vaccination reduces the chance of infection and outbreaks of disease in schools and communities by reducing the number of unprotected people who may be infected and subsequently transmit the disease. As of July 2012, all 50 states allow vaccination exemptions for medical reasons; 48 states allow exemptions for religious reasons; and 19 states allow exemptions for philosophical reasons. Medical exemptions are determined by a physician. These may occur when a child is allergic to some vaccine components or has an immune deficiency, such as occurs when being treated for cancer. Religious exemptions are allowed when immunizations contradict the parent's sincere religious beliefs. Philosophical exemptions refer to other non-religious beliefs held by the parents who do not believe that their child should be immunized.

Unvaccinated children are at greater risk of catching and spreading vaccine-preventable diseases. Various studies have looked at the health consequences of exemptions from immunization laws. These studies have found that individuals claiming religious and/or philosophical exemptions from immunization (exemptors) are at a greater risk of contracting the diseases and thus put the rest of the population at risk by spreading infection, adversely affecting the health of the community. Vaccinations have been a relatively effective public health measure and have played a large role in eradicating diseases like polio and smallpox in the United States and preventing many others (i.e. rubella, diphtheria, and whooping cough). However, in recent years, vaccinating children has become a topic of great debate with many arguing against vaccinating their children citing adverse reactions and links to autism among other factors.

It is proposed that that the HPV vaccination is made mandatory for all girls entering the sixth grade with no exemptions (excluding those for medical reasons).

Respond

Figure 2. Basics screen with proposal position

Should HPV Vaccine Be Required for School Entry

It's proposed that that the HPV vaccination is made mandatory for all girls entering the sixth grade with no exemptions (excluding those for medical reasons).

The Basics Submit

Should HPV Vaccine Be Required for School Entry

School immunization laws were first established to control outbreaks of smallpox and have subsequently been used to avoid epidemics of vaccine-preventable contagious diseases, such as measles, whooping cough and polio. Currently...more

It's proposed that: that the HPV vaccination is made mandatory for all girls entering the sixth grade with no exemptions (excluding those for medical reasons).

Do you agree with the proposal?

I Agree I Agree Strongly I Disagree I Disagree Strongly

Who matters most?

You No-One In Particular Everyone

Your Institution A Group Of People Or Animals One Individual (Born Or Unborn)

[Go to Reactions](#)

Figure 3. Reactions screen where users can consider their feelings regarding the case proposal and adjust the ring segments according to their values.

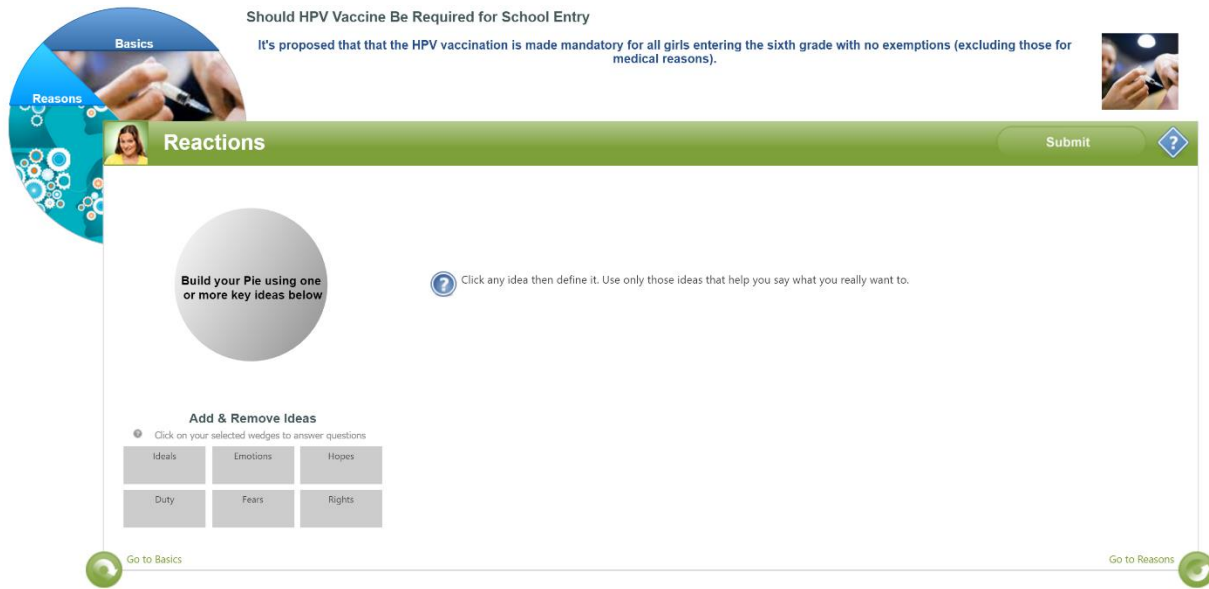


Figure 4. Reasons screen where users can consider the proposal in more depth using the Ethical Grid (Seedhouse, 2009).

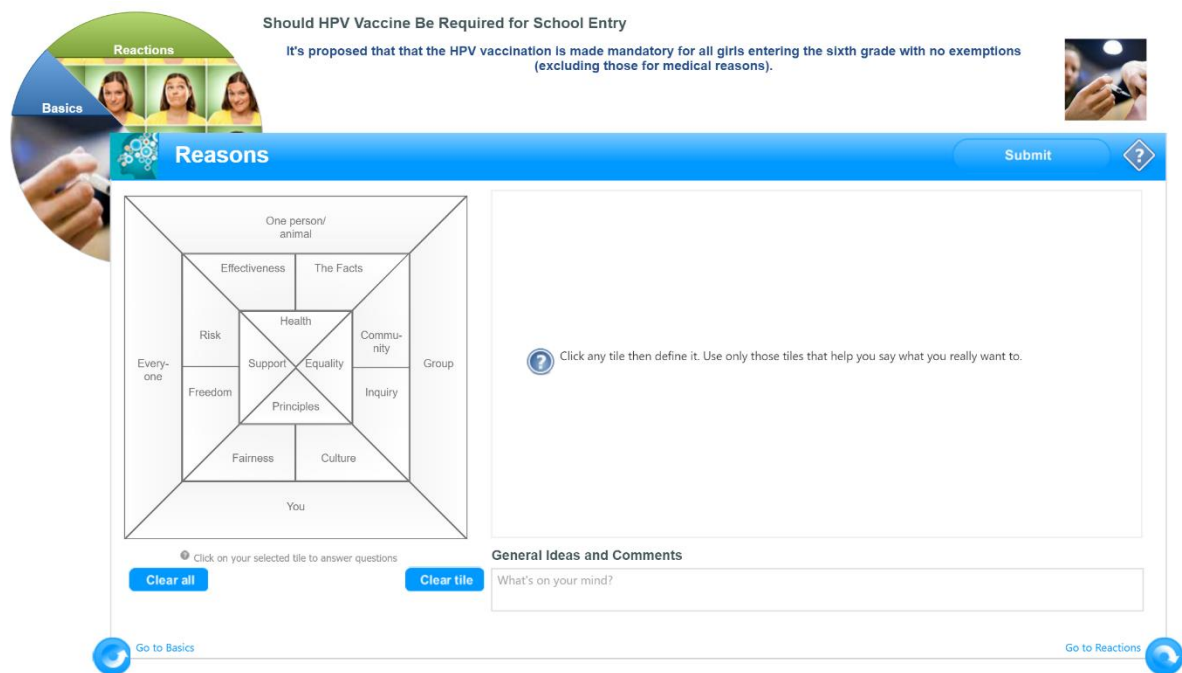


Figure 5. Example results page where users can view the results of their responses and their peers

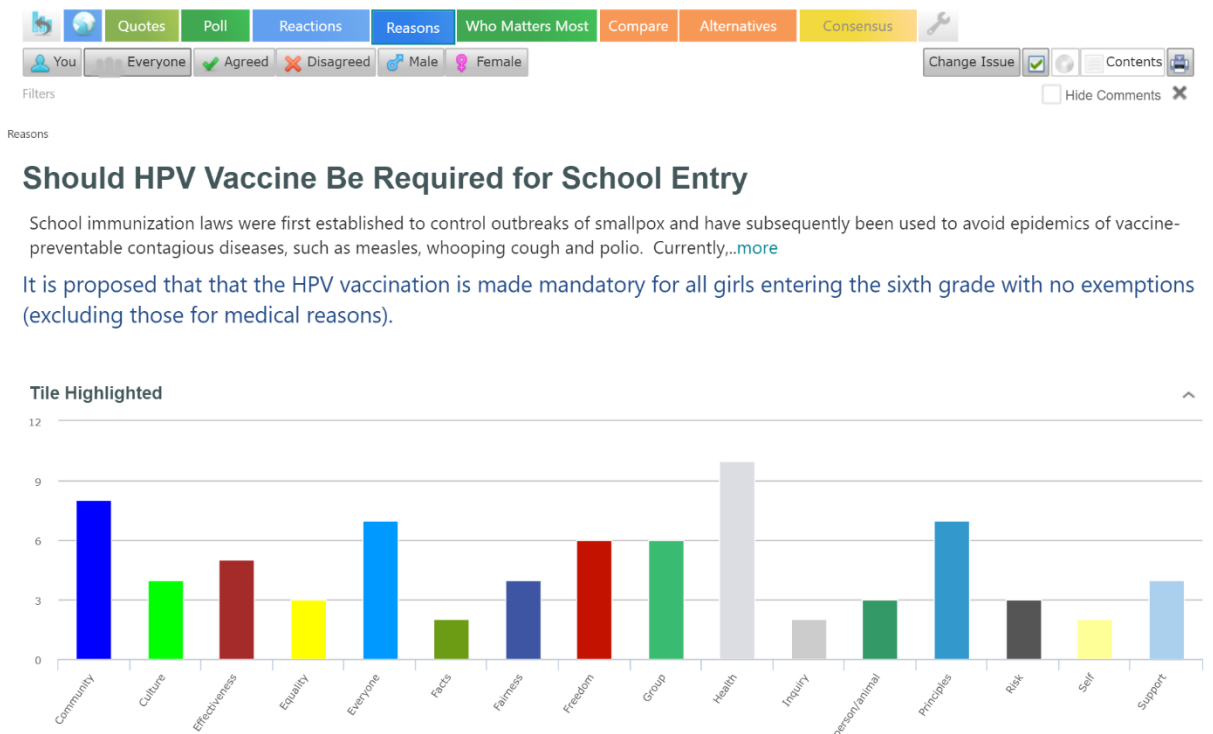


Table 1. Descriptive statistics for the educational efficacy of the Values Exchange Software Tool

Construct	<i>N</i>	<i>M</i>	<i>SD</i>	Max	Min
Student Engagement	10	4.70	0	5	4
Student Knowledge	10	4.67	0.12	5	3
Student Satisfaction	10	4.93	0.12	5	4
Usability	10	4.65	0.07	5	3

Appendix: Sample survey questions

Question	1 (strongly agree)	2 (disagree)	3 (neutral)	4 (agree)	5 (strongly agree)
1. I enjoyed using the Values Exchange software program.					
2. The Values Exchange software program was easy to use.					
3. The Values Exchange software program challenged my thinking.					
4. I felt the Values Exchange software program made learning fun and exciting.					