

# Evaluating Educational Materials that Teach the Risks of Prenatal Alcohol Exposure

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# **Evaluating Educational Materials that Teach the Risks of Prenatal Alcohol Exposure**

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## **Abstract**

The National Organisation for FASD works to spread awareness of Fetal Alcohol Spectrum Disorder (FASD) in the UK. Despite the high prevalence of FASD in the UK, there is little formal education about the risks of prenatal alcohol exposure including FASD. The goal of this project was to evaluate the effectiveness of National FASD's educational materials on FASD for young adults ages 16-18. We recruited three lecturers in Furthering Education colleges to pilot the lesson. Through the assessments and lecturer interviews, we determined that the lesson was engaging and successful in conveying key concepts. We also found that the lesson was easy to implement and suitable for the age group. Drawing on student and lecturer feedback, we recommend adjustments in the lesson plan.

# Executive Summary

Prenatal alcohol exposure can lead to many problems, causing lifelong effects such as Fetal Alcohol Spectrum Disorder (FASD). The varying effects of FASD and the secondary disabilities associated with it can have large impacts on the lives of those with FASD. FASD is strikingly common, with 2% to 4% of the UK population estimated to have FASD (National Organisation for FASD, 2020). Among young adults, a low level of knowledge about FASD combined with a high rate of regular alcohol consumption and potential for unsafe sexual behaviour creates risk.

The National Organisation for FASD (National FASD) is a UK-based charity organisation working to increase public awareness about FASD. They have a RISK lesson plan to help educate young adults on common misconceptions and facts regarding prenatal alcohol exposure (National FASD, 2020). Although the UK does not currently mandate FASD education in post-16 schools, National FASD would like to see this lesson plan implemented in schools that work with young adults ages 16-18. In order to evaluate the effectiveness of National FASD's educational materials for young adults, we completed the following objectives:

1. Designed a pre-assessment and post-assessment to test student FASD knowledge.
2. Worked with lecturers in Furthering Education colleges to pilot National FASD's lesson materials and implement testing.
3. Identified receptiveness to the lesson and resulting changes in student knowledge and attitude.
4. Created supplemental educational materials to further student learning on FASD.

## Methods

We identified key concepts from the lesson and created assessments that tested for student change in knowledge and attitude. Additionally, we added questions on the post-assessment to prompt student feedback. We recruited and prepared three health lecturers in Furthering Education colleges in northern England to pilot the lesson and distribute the assessments to their classes. The lesson involves viewing a brief film, interspersed with discussion, leading into a lecture on prenatal alcohol exposure and FASD. The lesson has both a 60-minute or 90-minute version. A total of 38 students completed the pre- and post -assessments. We interviewed lecturers after they taught the lesson to gain their perspective. Lastly, we created a leaflet based on content from the lesson as well as feedback from lecturers and students.



## Student Learning and Receptiveness

**Students' knowledge and understanding of FASD increased after taking the lesson.** Students demonstrated knowledge gain after the lesson, with 95% of students getting a higher score on the post-assessment. In addition, the average score for selected-response assessment questions was 7.2 out of 12 points before the lesson and 10.1 out of 12 points after the lesson (Figure I). The Wilcoxon Signed-Rank Test, which tested the paired student responses for a statistically significant change in score, revealed a significant difference,  $z = 5.3$  and  $p < 0.001$ . These results suggest that the lesson advanced students' knowledge about prenatal alcohol exposure and FASD.

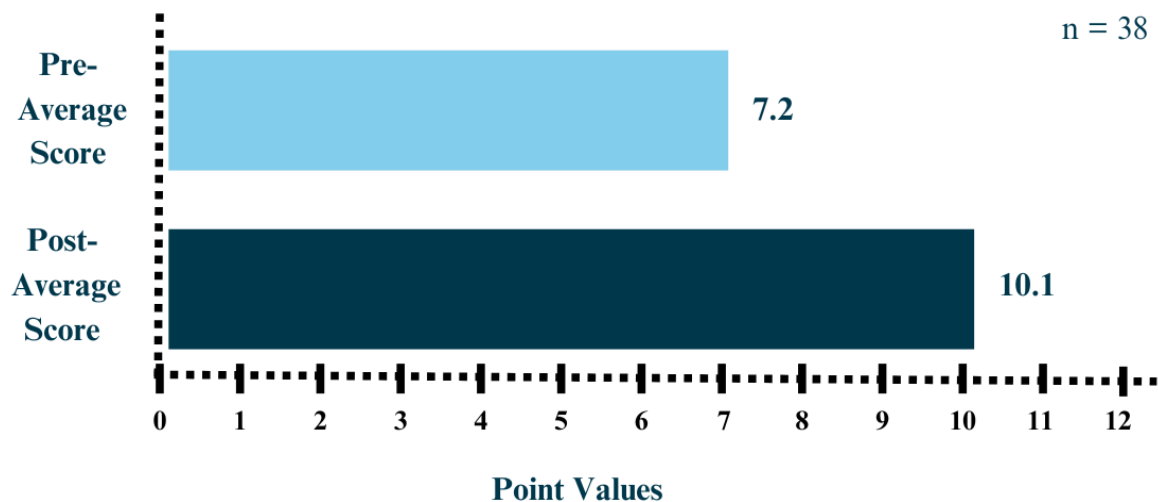


Figure I: The average correctness score of the selected-response knowledge questions, where each question is worth one point for a total of 12 points.

While most students had a basic knowledge of FASD on the pre-assessment, there was significant knowledge gain in content related to correcting some common misconceptions. These high knowledge gains are highlighted in Figure II, where the percentage of correct answers increase greatly between the pre-assessment and post-assessment data. Additionally, after receiving the lesson, students were able to provide more detailed and accurate responses to open-ended questions that asked about the definition of FASD and its symptoms.

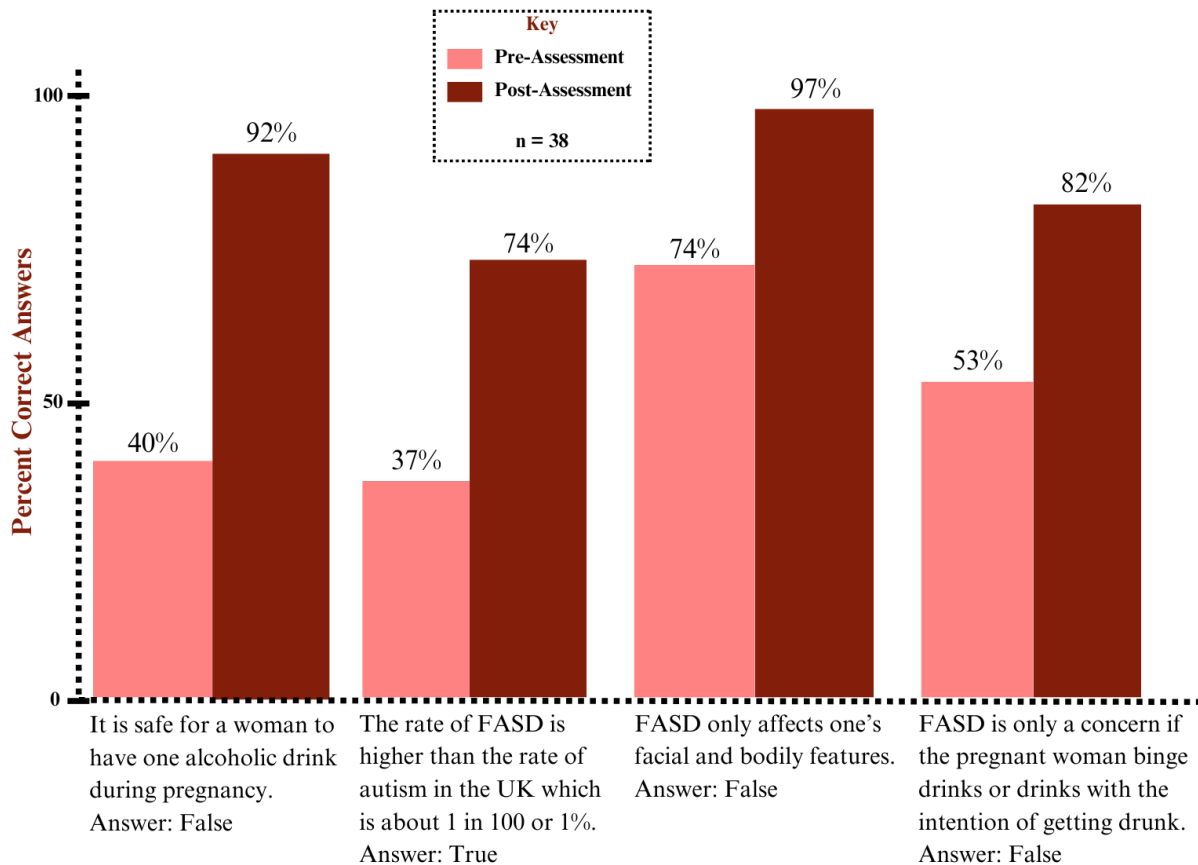


Figure II. The percentage of students that correctly answered the pre- and post-assessment questions, demonstrating high knowledge gains.

**Some concepts of the lesson were not well understood by students.** One question asked students to compare the long-term harmfulness of heroin and alcohol to a developing foetus, which only 53% of students correctly answered on the post-assessment. Another example is that only 58% of students identified that a pint of beer possesses similar risk to a shot of a spirit on the post-assessment. These questions demonstrate low student understanding at the end of the lesson, suggesting that the lesson was not as effective in addressing these points.

**When prompted to provide feedback, a majority of students reported the lesson to be educational, relevant, and impactful.** Sixty-nine percent of students agreed or strongly agreed that the lesson taught them something new about FASD and 64% agreed or strongly agreed that the lesson cleared up a misconception about FASD. Eighty-four percent of students agreed or strongly agreed that the content was relevant to their age group, due to their tendency to drink, party, and have sex. Lastly, 74% of students indicated that the lesson prompted them to think more about the risks of sexual activity and drinking. Some students additionally gave feedback that asked to increase the amount of content in regards to symptoms, treatment, and real-life examples of someone living with FASD.

## **Lecturer Perspectives on the Lesson**

**Lecturers found the lesson plan comprehensive and suitable for a variety of classes.** The lecturers generally described the lesson implementation as being simple and understandable. They all claimed to follow the lesson plan closely. They also appreciated the content warnings embedded in the lesson plan since they recognised the sensitivity of the topics.

**Lecturers found the content relevant and impactful for the age group.** During the moment in the film when the pregnancy is revealed, all lecturers reported the students being surprised. When it came to discussions about the choices of the pregnant woman in the film, lecturers reported high levels of student engagement. Lecturers noted that students were especially engaged in the discussion about the risk of being a fighter while pregnant. In addition, the lecturers brought up various points of the lesson being particularly impactful, such as the analogy of comparing one round of drinks to one round in the ring.

**However, some portions of the lesson were less effective in keeping the students engaged.** One of the lecturers brought up how there were a lot of discussion points in the beginning, but less activities to engage the students towards the end. They claimed “there was quite a lot of, like, information overload.” Another lecturer also noted that much of the introduction in the RISK film felt slow. However, this lecturer had previously taught about FASD to their class, which may have made a lot of the beginning section feel redundant.

## **Supplemental Material**

We created a leaflet designed to reinforce concepts from the lesson or act as a stand-alone informational brochure on the risks of prenatal alcohol exposure and FASD for young adults ages 16-18. The material is titled “Drinking, Sex, and You” and includes an illustration of alcohol and condoms, meant to draw the attention of teen audiences and persuade them to read further. Sections such as “Alcohol and Pregnancy” and “What is FASD?” include information that is taught in the RISK lesson in order to reinforce these key concepts and help students recall what they learned. Another section of the leaflet, “Life with FASD”, responds to feedback from lecturers and students who wanted to know more about lived experiences of people with FASD. Lastly, the common misconceptions section covers five misconceptions. The questions in the assessments related to these misconceptions demonstrated a low initial understanding of these concepts. Additionally, some students identified these misconceptions as commonly held among their peers or as the key fact that they learned from the lesson.

## **Lesson Improvements and Implementation Recommendations**

**The RISK lesson is best suited as an introductory lesson about prenatal alcohol exposure and FASD, and may not be engaging for those with prior knowledge.** As stated earlier, the lecturer who had previously taught FASD found the introduction to the lesson to be “superfluous.” Multiple students from that class stated that the lesson was not as in-depth as they would have preferred. However, the lecturers who had not previously taught FASD material reported high levels of engagement throughout the lesson. Additionally, we found that most students from those classes did not report wanting more content within the lesson. Therefore, we believe that the National FASD should consider advertising that the RISK lesson is intended to be an introductory lesson to prenatal alcohol exposure and FASD.

**We recommend that National FASD consider adding at least one interactive activity towards the end of the lesson.** The discussion sections earlier in the lesson were found to be engaging for the students, however, interactivity noticeably dropped afterwards. The lecturers noted that the end of the lesson was an “information overload” and came abruptly. Therefore additional interactive activities could be used to break up the information, act as a closing for the lesson, or both.

## **Limitations and Recommendations for Further Research**

The pre- and post- assessments that we designed were not formally tested for validity and reliability. We largely relied on the students having put at least some effort into completing the assessment and participating in the lesson, and despite an option to select “unsure,” they might have guessed correct responses. In addition, some of the post-assessment responses could have been affected by social desirability bias, which is a tendency for respondents to answer as they believe others would want. All of the classes that this lesson was piloted in were health & social care classes, meaning that the students may have been more receptive to the lesson or could have been more likely to deduce a correct answer on a pre-assessment. Similarly, the students were 90% female, which could affect their opinions on how relatable the lesson is to the 16 to 18 year old population.

This research has provided insight into the use of National FASD’s RISK lesson with health and social care students in Furthering Education colleges, but this is only a small portion of the total 16-18 year old population. To further spread this information and reach the young adults who would likely not learn about prenatal alcohol exposure and FASD before graduating, these materials should be tested with larger groups of 16-18 year old students. Furthermore, this project only measured short-term knowledge gain. In the future, testing this material in a longer time-span would allow National FASD to see the long-term effectiveness of the lesson. For long-term testing, it would also be ideal to keep developing the pre- and post- assessments to get more accurate gauges of student learning and engagement.

## Acknowledgements

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2.2 The National Organisation for FASD	AW, KD	KT
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3.3 Objective 3: Identify Lesson Impacts and Areas of Improvement	KN	AW, KD, KT
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4.3 General Response to the Lesson	KD, KN	KT
<b>Chapter 5: Deliverables and Recommendations</b>		
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5.2 Lesson Improvements and Implementation Recommendations	AW	KN
5.3 PSHE Association Accreditation	KT	
<b>Chapter 6: Conclusion</b>		
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<b>Appendices</b>		
Appendix A: Student Pre and Post Assessments with Student Survey Preamble	All	All

Appendix B: Lecturer Consent Form	AW, KN	KT
Appendix C: Student Study Information Sheet	KN	KT
Appendix D: Lecturer Emails	KN	KT
Appendix E: College Outreach Materials	KN	All
Appendix F: Lesson Instruction Sheet	KT	KN
Appendix G: Lecturer Questions	All	All
Appendix H: Student Assessment Rubric	KN	AW, KD, KT
Appendix I: Student Assessment Data	N/A	KD, KN
Appendix J: Teacher Interview Summaries	N/A	AW, KN
Appendix K: Supplemental Brochure and Leaflet	KT	AW
Appendix J: PSHE Association Quality Mark Eligibility Questions	KT	KN

# Table of Contents

<b>Abstract</b>	<b>ii</b>
<b>Executive Summary</b>	<b>iii</b>
<b>Acknowledgements</b>	<b>viii</b>
<b>Meet the Team</b>	<b>ix</b>
<b>Authorship</b>	<b>x</b>
<b>Table of Contents</b>	
<b>Chapter 1: Introduction</b>	<b>1</b>
<b>Chapter 2: Background</b>	<b>3</b>
2.1 Fetal Alcohol Spectrum Disorder (FASD)	3
2.1.1 Causes, Impacts, and Treatment of FASD	3
2.1.2 Young Adults' Susceptibility to Alcohol-Exposed Pregnancy	5
2.1.3 Statutory Requirements for UK Health Education at the Secondary Level	6
2.2 The National Organisation for FASD	8
2.2.1 Policy Reform and Education Efforts	8
2.2.2 The RISK Film and Target Audience	9
2.3 Designing Assessments for Student Learning and Lesson Improvement	10
2.3.1 Backwards Design: Learning Outcomes and Guiding Questions	10
2.3.2 Concepts of Assessment Design	14
2.3.3 Developing Assessments	16
<b>Chapter 3: Methodology</b>	<b>18</b>
3.1 Designing a Student Assessment Method and Consent Documents	18
3.1.1 The Design Process	19
3.1.2 Protecting Rights of Research Participants	20
3.2 Piloting the Lesson	21
3.2.1 Recruiting Lecturers from FE Colleges	21
3.2.2 Preparing Lecturers for Lesson Delivery	22
3.3 Analysing Lesson Effectiveness and Areas for Improvement	22
3.3.1 Incorporating Feedback from Lecturers	22
3.3.2 Assessing Changes in Student Knowledge	23
3.3.3 Limitations	24
3.4 Designing Supplemental Education Materials	25
<b>Chapter 4: Findings</b>	<b>26</b>
4.1 Student Learning and Receptiveness to the RISK Lesson	26
4.1.1 Student Learning	26
4.1.2 Content and Lesson Materials	29
4.1.3 Limitations	31

4.2 Lecturer Perspectives on the Lesson	32
4.2.1 Implementing the Lesson	32
4.2.2 Content and Student Participation	33
4.3 General Response to the Lesson	34
<b>Chapter 5: Supplemental Materials and Recommendations</b>	<b>36</b>
5.1 Supplemental Material: Trifold Brochure and Digital Leaflet	36
5.2 Lesson Improvements and Implementation Recommendations	38
5.3 PSHE Association Accreditation	39
<b>Chapter 6: Conclusion</b>	<b>41</b>
<b>References</b>	<b>42</b>
<b>Appendix A: Student Pre and Post Assessments with Student Survey Preamble</b>	<b>45</b>
<b>Appendix B: Lecturer Consent Forms</b>	<b>50</b>
Written Consent Form	50
Verbal Consent Form	52
<b>Appendix C: Student Study Information Sheet</b>	<b>53</b>
<b>Appendix D: Lecturer Emails</b>	<b>54</b>
Lesson Introduction Email	54
Lesson Recruitment Emails	55
<b>Appendix E: College Outreach Call Script</b>	<b>56</b>
<b>Appendix F: Lesson Instruction Sheet</b>	<b>57</b>
<b>Appendix G: Lecturer Questions</b>	<b>59</b>
Initial Lecturer Demographic Questions	59
Lecturer Interview Guide	59
<b>Appendix H: Student Assessment Rubrics and Codes</b>	<b>61</b>
Open-Ended Response Rubric	61
Student Assessment Knowledge Scoresheet	62
Feedback Coding	63
<b>Appendix I: Student Assessment Data</b>	<b>64</b>
Accessing Raw Data	64
Student Responses to Multiple-Choice Knowledge Questions	64
<b>Appendix J: Lecturer Interview Summaries</b>	<b>67</b>
Lecturer 1 Summary	67
Lecturer 2 Summary	68
Lecturer 3 Summary	69
<b>Appendix K: Supplemental Brochure and Leaflet</b>	<b>70</b>
Trifold Brochure	70
Digital Leaflet	71
<b>Appendix L: PSHE Association Quality Mark Eligibility Questions</b>	<b>73</b>

## Table of Figures & Tables

Figure I: Average Correctness Score of the Selected-Response Knowledge Questions	iv
Figure II: Pre- and Post-Assessment Questions Demonstrating High Knowledge Gains	v
Table 1: Recommended Best Practices for Relationship and Sex Education (RSE)	7
Table 2: National FASD Resources from the PreventFasd.info Website	9
Figure 1: Bloom’s Taxonomy of Educational Objectives	11
Figure 2: The Stages of Change Theory	12
Figure 3: Three Basic Questions for Designing Quality Assessments	14
Figure 4: Six Facets of Understanding for Building Assessments	15
Table 3: Classification of Survey Items	16
Figure 5: Methodology Map	18
Table 4: The Key Topics for Pre and Post Assessment	19
Figure 6: Average Correctness Score of the Selected-Response Knowledge Questions	26
Figure 7: Student Open-Response Questions Categorised by Response Quality	27
Figure 8: Pre- and Post-Assessment Questions Demonstrating High Knowledge Gains	28
Figure 9: Questions with Low Correct Response Rate or Low Improvement	29
Figure 10: Student Responses to Questions for Feedback on Learning	30
Figure 11: Student Responses to Questions for Feedback on the Impact of the Lesson	31
Table 5: Key Lecturer Information and Implementation Choices	32
Figure 12: Title and Cover Imagery of Supplemental Material	36
Figure 13: Lived Experience Example and Additional Resources from the Leaflet	37
Figure 14: Five Common FASD Misconceptions	38

# Chapter 1: Introduction

Prenatal alcohol exposure can lead to many problems, causing lifelong effects such as Fetal Alcohol Spectrum Disorder (FASD). According to the National Institute on Alcohol Abuse and Alcoholism (2023), FASD “refers to a range of physical, cognitive, and behavioural abnormalities caused by prenatal alcohol exposure”. This exposure can lead to growth deficiencies or facial anomalies in the child. It disturbs neural development impacting a child’s learning and memory, and it can even damage the child’s DNA (Popova et al., 2023). The varying effects of FASD and secondary disabilities associated can have large impacts on the lives of those with FASD, such as navigating daily life and work. Studies internationally have determined that the majority of adults with moderate and severe symptoms of FASD are unable to hold a traditional job or maintain an independent lifestyle (Trathen, 2021).

FASD is strikingly present throughout the world. The World Health Organization (2018) reported that an estimated 77 people in every 10,000 in the world have FASD (p. 6). Within the European region, the incidence of FASD spikes to 198 people in every 10,000 (WHO, 2018, p. 6), and in the United Kingdom between 2% and 4% of the population is estimated to have FASD, “a higher rate than autism” (National Organisation for FASD, 2020). These statistics—and the negative impacts of the disorder—uncover just how important it is to raise awareness and implement preventative strategies to lessen the occurrence of prenatal alcohol exposure.

The UK Chief Medical Officers advise that the best source of prevention for FASD is to avoid drinking any alcohol during pregnancy (National Organisation for FASD, 2023). While the solution seems simple, a high number of people still may still do so because of their misconceptions about alcohol and pregnancy. Public health expert Andrew Trathen conducted a health needs assessment on FASD for England (2021). This report drew on a NOFAS-UK survey that revealed 24% of people could not identify that the safest choice is to avoid alcohol during pregnancy (Trathen, 2021). Young adults especially are prone to being more risky and misinformed. Trathen (2021) reported that 33% of people ages 18 to 24 did not know that one should abstain from drinking during pregnancy. A low level of knowledge combined with a high rate of regular alcohol consumption is cause for concern. A National Health Service (NHS) survey showed that in 2022, 36% of the 16-24 year olds surveyed consumed alcohol at least once a week (NHS Digital, 2022). Furthermore, young adults are less likely to know they are pregnant early on. Wellings et al. (2013) found that only 12% of pregnancies in those aged 16 to 19 were planned. All of this suggests that young adults are a vulnerable population to prenatal alcohol exposure.

The National Organisation for FASD (National FASD) is an England-based charity organisation working to increase public awareness of what FASD is and how to prevent it (National FASD, 2020). Their website houses resources that can be used to raise awareness. Some of this material, like their *preventfasd.info* website, is targeted towards young adults and has lecturer resources and a lesson plan to teach young adults ages 16 to 18 about FASD.

Although the UK does not currently mandate FASD education in public schools, National FASD would like to see these materials implemented in schools who work with young adults. Information about the effectiveness of their educational materials would help National FASD advocate for such actions.

Our goal was to evaluate the effectiveness of National FASD's educational materials for young adults. In order to meet this goal, we: (1) designed a pre-assessment and a post-assessment to test FASD knowledge; (2) worked with lecturers to pilot National FASD's lesson materials and implement testing with college students 16-18 years of age; (3) identified receptiveness to the lesson and resulting changes in student knowledge and attitude; and (4) created supplemental educational materials to further student learning on FASD.



## Chapter 2: Background

This background chapter details three core topics about evaluating educational materials that teach the risks of prenatal alcohol exposure. The first topic includes the causes, symptoms, treatments, and social impact of Fetal Alcohol Spectrum Disorder (FASD). It also discusses the risks that young adults<sup>1</sup> are prone to taking and how that makes them an ideal target for preventative education. The next section reviews the many educational resources developed by the National Organisation for FASD (National FASD). Some of these resources are designed to target students in post-16<sup>2</sup> schools. Students in this age group can be found in Furthering Education (FE) colleges in the UK, so we introduce these colleges and their current health curriculum. Lastly, this chapter explores some basic tools, principles, formats, and example questions for designing assessments to evaluate a lesson plan.

### 2.1 Fetal Alcohol Spectrum Disorder (FASD)

This section introduces what FASD is, its causes and symptoms, and the impact it has both socially and economically. This leads to the importance of young adults as an audience for education due to their susceptibility to risky behaviours that make them more prone to alcohol-exposed pregnancies.

#### 2.1.1 Causes, Impacts, and Treatment of FASD

FASD results from an alcohol exposed pregnancy. It is “characterised by neurodevelopmental impairment with or without facial dysmorphology<sup>3</sup>, congenital anomalies and poor growth” (Popova et al., 2023). Despite an estimated 3.24% prevalence in the UK, FASD is one of the most preventable foetal disorders (Trathen, 2021). After consumption, alcohol passes to the foetus through the placenta and disrupts systems necessary for development. This process continues until the pregnant person can metabolise the alcohol, as the foetus has no ability to do so. The inability to process the alcohol is particularly dangerous, as the alcohol leaves the foetus at a much slower rate than it enters (Trathen, 2021). The most prominent effects of alcohol on a developing foetus are neural; alcohol can deplete neural cells and disturb neural development processes, or damage the systems for foetal brain development (Popova et al., 2023). Additionally, when alcohol is processed, chemicals are formed that may disrupt or damage DNA and cell processes in a variety of manners (Popova et al., 2023).

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<sup>1</sup> Young adults are generally defined in this context as people of ages 16 to 24

<sup>2</sup> Post-16 refers to schooling after completing secondary school which is commonly completed at age 16 in the UK

<sup>3</sup> Dysmorphology refers to atypical structure, often due to abnormal growth

Symptoms resulting from prenatal alcohol exposure are varied in type and severity, which are diagnosed on a spectrum accordingly. The severity of most symptoms have direct correlation to the frequency and amount of alcohol exposure (Popova et al., 2023). The type of symptoms exhibited in FASD, however, are related to the stage of foetal development where the alcohol exposure took place, commonly measured by weeks of gestation (Popova et al., 2023). Craniofacial dysmorphism, which occurs in less than 10% of FASD diagnoses but is often the most commonly known symptom of FASD, occurs due to prenatal alcohol exposure before week eight of gestation (*Home—National FASD*, 2020; Popova et al., 2023). After week eight of gestation, skeletal and internal organ dysmorphism are unlikely, but damage or disruption to brain development remains a prominent risk for the rest of pregnancy (Popova et al., 2023, Trathen, 2021).

The management and treatment of FASD can place a heavy burden on the person with FASD, their family, and their community. While FASD has a general set of symptoms, the specific effects and their presentation for each person can vary greatly, dictating the need for individual assessment and management plans. Additionally, it is likely that these plans will change and adapt over time to best match current lifestyle (Trathen, 2021).

In the most severe cases of FASD, where the foetus developed skeletal or internal dysmorphism, the initial management of FASD may be surgery or specialised medical interventions. These procedures are typically individualised according to the presented symptoms as no standard intervention has been established (Trathen, 2021). Cases of FASD that do not qualify for surgery or specialised medical intervention may use management or treatment plans to address impaired behaviour, speech and language, social skills, and physical and cognitive abilities. These affected abilities commonly include executive functioning, self regulation, and learning disabilities (Popova et al., 2023). Pharmacological interventions are often used to treat symptoms of FASD or concurrent disorders such as sleep disorders, ADHD, and anxiety, but no large-scale research has been conducted to treat specifically FASD (Trathen, 2021; Popova et al., 2023). The majority of treatment is a variety of therapies, working with professionals to address adverse symptoms and often gain support in building a thriving lifestyle.

Trathen (2021) highlights the importance of obtaining a diagnosis, which provides validation and understanding of symptoms for the person with FASD and their community. A diagnosis also allows those affected to seek necessary treatment. However, Trathen also notes that seeking a diagnosis can serve as a source of stress, anxiety, and perhaps guilt for parents or caregivers. FASD is a lifelong condition that will likely need to be addressed continually, which can further generate stress, feelings of isolation, and economic burden for those with FASD and any caregivers (Popova et al., 2023). Families face economic burden with immediate medical costs of diagnosis, treatment, and related services. They could also go on to incur costs of specific social or educational programmes for those with FASD. Furthermore, local and national communities are impacted with the estimated annual cost of FASD to the UK at two billion pounds. This estimated cost is generated from consideration of educational and justice systems and government provided healthcare (Trathen, 2021).

### **2.1.2 Young Adults' Susceptibility to Alcohol-Exposed Pregnancy**

Many young adults tend to engage in behaviour that can place them at higher risk for exposing a pregnancy to alcohol. Often, this includes increased drinking in social settings and unsafe sexual practices - which commonly occur together.

Social drinking is common in the UK. In England's 2022 Annual Health Survey, 81% of adults reported drinking in the past year and almost half of adults reported drinking weekly (NHS Digital, 2022). Many people approach drinking as a traditional form of recreation. Young adults in the UK often participate in this drinking culture. By the age of 15, 65% of English youth have drunk alcohol and 11% report drinking at least once a month (NHS Digital, 2023). Over a third, 36%, of young adults aged 16-24 report drinking weekly (NHS Digital, 2022).

Underage drinking can be attributed to many factors, as youth often subscribe to the thrills of doing forbidden activities and perceive alcohol as an important ingredient to a fun environment. Hogan et al. (2013) identified peer influence, social networks, and seeking pleasure as the strongest influences on youth drinking culture. Given the illegal nature of underage drinking and social components of use, most young adults drink less frequently than adults. Despite often being limited to weekends, young adults may be consuming a large amount of alcohol each week. In one study in 2022, 20% of young adult participants reported risky drinking behaviour, or consuming at least 14 units of alcohol in a week (14 single shots of spirits, 7 bottles of standard beer, or 1.5 bottles of wine) (NHS Digital, 2022). Concentrated into a few days of the week, this high consumption behaviour is known as binge drinking, which not only increases the health risks of alcohol in the body, but can drastically impact behaviour and judgement (Khadr et al., 2016).

Practising unsafe sex can also increase the risk for unintended foetal harm, due to the increased chance of unexpected pregnancy. In the past sixty years, from 1955 to 2015, the median age of the first instance of sexual intercourse in Britain has decreased from 18 for men and 19 for women to 16 years old for both (Wellings et al., 2016). As such, teenagers now have a higher chance of being involved in sexual contact and encountering the related risks. Further, in a 2016 survey of British young adults, aged 16-24, approximately 67% of men and 73% of women reported feeling pressure to have sex (Khadr et al.). Wellings et al. (2013) additionally found a higher risk for unsafe sexual behaviour in those who had the majority of their sex education outside of school, used substances, or had multiple partners in a short span of time.

When considering these rates of underage drinking and unsafe sex, it is clear that teenagers are prone to making risky decisions. Their lack of a full understanding of the consequences of sexual behaviour can have potentially unexpected results, like transmission of an STI or STD, or an unexpected pregnancy. While sexually active teens record high use of contraception, the methods they use tend to be less effective than those used by older sexually active populations (Wellings et al., 2013). Wellings et al. (2013) determined that British teens most commonly experienced unplanned pregnancy when compared to other age groups. In a

survey of pregnant women aged 16-19, only 12% of pregnancies were identified as planned by the London Measure of Unplanned Pregnancy (Wellings et. al., 2013). Unexpected pregnancies tend to be caught and acted upon later, due to the pregnant woman not realising the potential first signs of pregnancy. As such, the behaviour of the person may present negative effects on the pregnancy due to lack of awareness.

When drinking is combined with other risky behaviours, such as practising unsafe sex, the risk of prenatal alcohol exposure increases. Young adults who reported frequent binge drinking were more likely to have their first instance of sexual intercourse with a partner without using a condom, by 68% for men and 94% for women (Khadr et al., 2016). Frequent drinkers were also more likely to be open to sex shortly after meeting. In the event that these risky behaviours result in unplanned pregnancy, drinking while pregnant would also have negative effects on the developing foetus, increasing the risk for FASD.

### **2.1.3 Statutory Requirements for UK Health Education at the Secondary Level**

The UK has a national curriculum for Personal, Social, Health, and Economic (PSHE) education at the primary and secondary levels (PSHE Association, 2025). At the secondary level, some of the recommended learning outcomes for resources include being able to recognise risk, understanding mixed messages in media about harmful substances, and knowing where they can go to for support (PSHE Association, 2025). With regards to sexual health, some learning outcomes are understanding healthy pregnancies and the risks of unprotected sex. The Relationship and Sex Education (RSE) subset of PSHE gives similar criteria for secondary level schooling, especially with making informed choices when it comes to sexual behaviour (GOV.UK, 2021). Pound et al. (2017) provides recommendations on best practices for lesson creation and delivery as summarised in Table 1.

The best practices for RSE communicated in Table 1 are comprehensive and additional education about the risks of prenatal alcohol exposure would be a natural fit. Currently, there is a statutory requirement to teach PSHE and RSE content from key stages 1-4, which correlate to primary and secondary schooling (PSHE Association, 2025). However, this is not a requirement at key stage 5, which occurs during post-16 schooling. This suggests that statutory requirements for RSE education at the post-16 level are not uniformly implemented in the UK. This gap is what many organisations around the UK are trying to address.

Table 1: Recommended Best Practices for Relationship and Sex Education (RSE)  
(Pound et al., 2017)

Topic	RSE Best Practices
<b>Curriculum Model</b>	<ul style="list-style-type: none"> <li>- Continue to cover topics until student is over 18 years old</li> <li>- Ensure all topics covered are age appropriate for the students</li> <li>- Allow curriculum to be flexible, easily adapted, and interactive</li> <li>- Detail the difference between core concepts and additional non-essential topics</li> <li>- Reference past curriculum in lessons</li> <li>- Include parents from the process and provide information to them</li> </ul>
<b>Content</b>	<ul style="list-style-type: none"> <li>- Utilise a ‘sex-positive’ approach when age appropriate</li> <li>- Include LGBTQ+ discussions on intercourse within lessons</li> <li>- Ensure cultural sensitivity and address gender inequality</li> <li>- Cover life skills, RSE specific skills, and how to be resilient</li> <li>- Impartially explore contraception, safe sex, pregnancy, and abortion</li> <li>- Discuss relationships and emotions</li> <li>- Involve youth input and feedback on the topics and content covered</li> <li>- Cover combinational risks</li> </ul>
<b>Delivery</b>	<ul style="list-style-type: none"> <li>- Ensure a safe space through well managed classroom control</li> <li>- Keep the class sizes as small as possible</li> <li>- Split classes by sex when it may increase comfort level</li> <li>- Collaborate with outside professionals and experts to teach material</li> <li>- Ensure confidentiality</li> </ul>

## **2.2 The National Organisation for FASD**

The National Organisation for FASD (previously NOFAS-UK) was founded in 2003. This section details their mission and what they have achieved in terms of legislation and education. It is followed by a section on their educational resources, focusing on the RISK lesson plan. Lastly, we bring up our focus on post-16 health education and describe existing health education that is given to them.

### **2.2.1 Policy Reform and Education Efforts**

The National Organisation for FASD's (National FASD) mission is to provide “support to people with Fetal Alcohol Spectrum Disorder (FASD), their families and communities; campaigns to raise public awareness; and [to promote] relevant policies and practices” (National Organisation for FASD, 2020). National FASD is active in advocating for reforms and attending discussions to spread awareness about FASD. For instance, the organisation's chief executive, Sandra Butcher (2024) attended the government's Health and Social Care Committee to push for policy reforms. She called for government consultation on the Department for Health and Social Care's FASD Health Needs Assessment to see how the recommendations in it can be enacted. She also advocated for an FASD prevention fund with money drawn from alcohol tax revenue (National Organisation for FASD, 2020). The organisation pushes to create legislation towards preventing FASD and providing support to those who already have it.

Additionally, National FASD has met with various government departments, including the Department for Education and the DHSC, to advocate for policies such as requiring basic FASD training for lecturers and using more prominent labels on alcohol products that better depict the threat they pose towards a pregnant person. A few notable discussion points from these meetings include an in-depth study on the awareness of FASD, the economic impacts that FASD can have, and some anecdotes from those who have been diagnosed with FASD.

The National Organisation for FASD also has a large variety of educational resources aimed at audiences ranging from the general public to practising nurses and midwives. Many of these resources are on its three websites: [National FASD](#), [Me & My FASD](#), and [Prevent FASD](#). The organisation's main website, National FASD, targets those who are caring or advising the care for a child with FASD. The site contains “easy-read” materials that can help readers learn about assisting those with FASD and how FASD affects the brain. It summarises reports from 2022 by medical professionals as well. For more in-depth information, it also features longer publications and a report titled *Not Commissioned: Systemic confusion in NHS services for alcohol, pregnancy and FASD*. Lastly, the site offers a pregnancy toolkit and an e-course, both of which are designed to prepare potential carers to effectively support a person with FASD.

The website called “Me & My FASD” is directed towards people who have FASD and want to learn more about it. Like the previously mentioned website, there are “easy-read” resources, but they also feature an interactive comic and a booklet. The main goal of this website

is to help people with FASD learn how they can cope with the cognitive effects they may experience so they can better describe what support they may need from others.

Lastly, the “PreventFASD” website contains educational resources that attempt to prevent risky behaviours and teach about FASD using more accessible language, examples, and a variety of media better suited for young adults. Brief descriptions of the resources it features are detailed in Table 2.

Table 2: National FASD Resources from the PreventFasd.info Website (Prevent FASD, 2021)

<b>Prevent FASD Resources</b>	
<b>Name</b>	<b>Description</b>
<b>RISK Film</b>	<p>A short film that has won numerous awards.</p> <ul style="list-style-type: none"> <li>- Depicts a woman who is training for an MMA fight and drinking recreationally</li> <li>- As she does so, she gets criticised for her choices</li> <li>- By the time she steps into the ring for her fight, it is revealed that she had been pregnant the entire time</li> </ul>
<b>The Conceivables</b>	<p>A small series of comic strips designed by Presseau et al. (2021).</p> <ul style="list-style-type: none"> <li>- Uses light-hearted characters that represent reproductive cells.</li> <li>- Educates on the risks of prenatal alcohol exposure</li> <li>- Demonstrates ways to support and spend time with a friend/acquaintance who is pregnant without drinking alcohol</li> </ul>
<b>NOments Campaign</b>	<p>A web series featuring pregnant reality TV star and fitness entrepreneur Louise Thompson.</p> <ul style="list-style-type: none"> <li>- Contains videos that detail her experience with staying sober</li> <li>- Includes mocktail recipes, which are drinks that mimic cocktails without the alcohol</li> </ul>

### 2.2.2 The RISK Film and Target Audience

The RISK film is 11 minutes in length and designed to be shown as part of a lesson. When asked about the making of the RISK film, writer and director Luke Bradford (2018) says that the “powerful image of a pregnant fighter in a ring ready for a bout stuck with [him].” He uses this imagery to prompt the audience to reconsider the risks they take by showing various risky activities, such as training for an MMA fight while pregnant. Whenever the woman faces criticism for choosing to participate in a fight, she is also seen drinking an alcoholic beverage. This is intended to tie together the analogy of a pregnant woman having one round of drinks



possessing a similar level of risk as her participating in one round of MMA fighting. Additionally, he utilises authentic reactions from an audience when the woman is revealed to be pregnant right before she steps into the ring. Showing these live reactions further exemplifies what viewers may be experiencing at that moment in the film.

The film comes with its two versions of a lesson plan provided by National FASD: one is 60 minutes in length, the other 90 minutes. Both versions start by having the lecturer play the film, pausing to discuss what risks were brought up in each part. They then end with information on FASD and a general discussion about the lesson's contents. While this information is clearly useful for students who do not know anything about prenatal alcohol exposure, students who may already know of FASD can also benefit from the lesson by being made aware of common misconceptions. For example, the lesson shows that medical advertisements in the early 1970s falsely claimed that alcohol could be beneficial to a developing baby, leading to misconceptions that are still present in the UK population to this day.

National FASD developed this teaching resource to educate young adults. They also wanted to test the suitability of the resource for post-16 students in Furthering Education (FE) colleges. As of September 2024, there were 262 FE colleges in the UK with the vast majority being in England (Higginbotham, 2023). These colleges are a form of school that act as an intermediary between secondary school and university. FE college studies include vocational, technical, apprenticeships, or general academic programmes. According to the Association of Colleges (AOC), FE colleges offer a wide variety of qualifications in engineering, IT, construction, and hospitality (n.d.). Throughout these programmes, there are opportunities to earn basic or national diplomas and certificates and focus on apprenticeships within the desired field. Some of the programmes offered through various FE colleges can be a stepping stone towards attending university.

## **2.3 Designing Assessments for Student Learning and Lesson Improvement**

This section describes some basic tools, principles, formats, and examples for designing assessments to evaluate a lesson plan. We start with a description of Backwards Design and tools that can be used to develop learning outcomes. We move to looking at how to determine goals for an assessment and how different question types can support different goals.

### **2.3.1 Backwards Design: Learning Outcomes and Guiding Questions**

In-class assessments are an efficient way to gain data on whether or not lesson plans successfully result in their desired learning outcomes, or goals that “specify what students should know and be able to do in various disciplines” (Wiggins & McTighe, 2005). While there are many methods to designing these assessments, the book *Understanding by Design* by Wiggins

and McTighe (2005) encourages the use of Backwards Design. Backwards Design recommends that educators determine the lesson's goal or desired learning outcomes first (Wiggins & McTighe, 2005). These goals and learning outcomes will act as the primary foundation for designing the assessments .

There are also tools that can help educators articulate learning outcomes. These tools help lecturers identify where the student should be in terms of knowledge and ability after the lesson. They can provide benchmarks to help measure change and identify areas of growth. One key tool for developing learning outcomes is Bloom's Taxonomy of Educational Objectives. There are six cognitive levels that range from low-order to high-order thinking which are found and explained below (University of Central Florida, n.d.). These levels, which transition from one to another, can help lecturers identify and create learning outcomes and goals for the lesson.

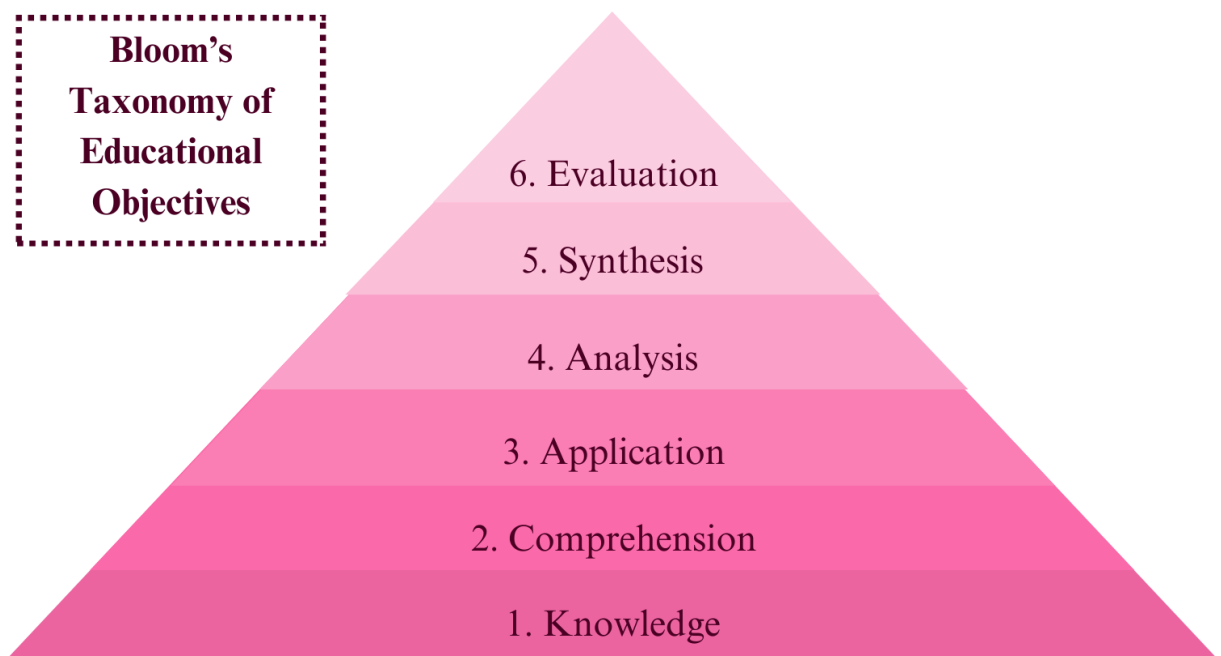


Figure 1: Bloom's Taxonomy of Educational Objectives (University of Central Florida, n.d.)

The levels of Bloom's Taxonomy are as follows (Colorado College, 2022: University of Central Florida, n.d.):

1. Knowledge (or Remember): Students should learn through repetition and be able to "recall appropriate, learned information on command."
2. Comprehension (or Understand): Students should be able to "understand the meaning of information and materials" taught during the lesson.
3. Application (or Apply): Students should be able to use their new knowledge as problem solving skills and tools to answer questions with "a single or best answer."
4. Analysis (or Analyse): Students should be able to identify the components of the topic or lesson in order to analyse and understand them better.

5. Synthesis (or Evaluate): Students should be able to use new knowledge with previous understanding in “new and creative applications”
6. Evaluation (or Create): Students should be able to assess their learned knowledge in accordance with their past knowledge, personal values, and given purpose.

Another example tool is the Stages of Change theory, also known as the transtheoretical model (TTM). This model is typically used to track changes in attitude and behaviour. Nahrain Raihan and Mark Cogburn (2023) list five stages, shown in Figure 2 and described further below.

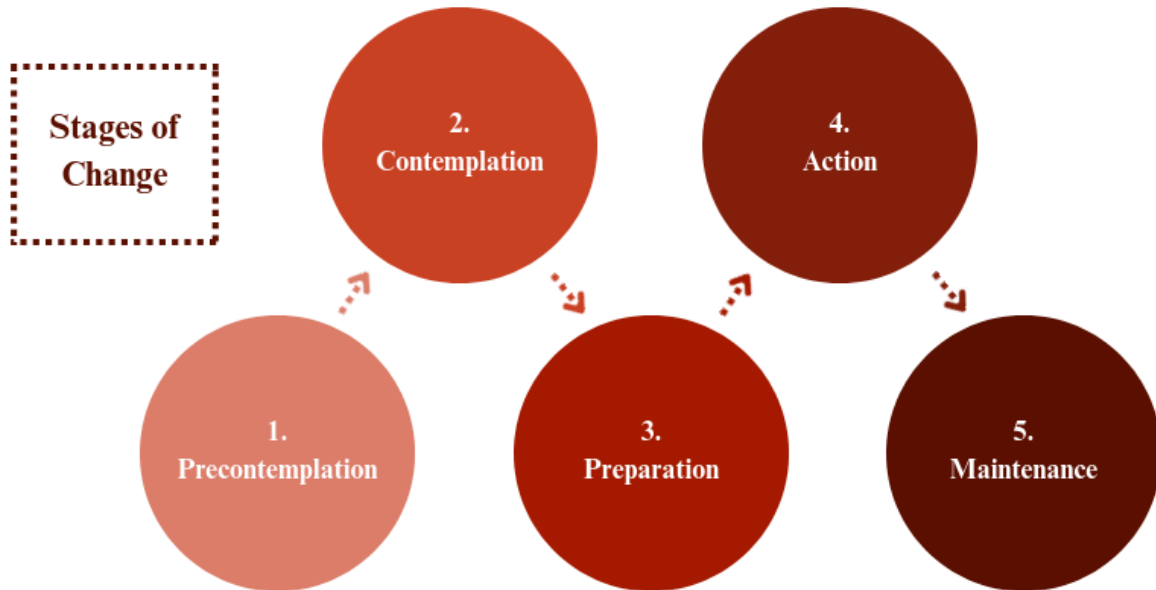


Figure 2: The Stages of Change Theory (Raihan & Cogburn, 2023).

The Stages of Change Theory are as follows:

1. Precontemplation: In this first stage, people do not see any issue with their current behaviour. They are likely in denial and could potentially get defensive of their actions if confronted. If encouraged or forced to try to stop, they are likely to quickly return to bad habits or behaviour as there is no intention to make change at this stage.
2. Contemplation: In this stage, people now have acknowledged that there is an issue, but there is still a lack of surety when it comes to whether or not the behaviour will change. Likely, this individual is still weighing the costs and benefits of a behavioural change. They will not be able to commit to working towards or making changes.
3. Preparation: People in this stage are well aware of the issue and are able to commit themselves to working towards making changes. This stage is where information on how

to change is gathered. This learning is a critical point. Without proper knowledge, people are prone to poor planning, which is more likely to lead to relapses.

4. Action: This is the stage where change occurs. At this point, people are starting to feel like they can achieve their goal. Having positive reinforcement is helpful within this stage. People tend to try and jump to this stage, but those who skip stages will struggle with challenges that may arise.
5. Maintenance: After six months of successful change has passed, people move into the maintenance stage. The longer a person is in this stage, the more their confidence in their ability grows. They will likely have a more in-depth understanding of what might cause the bad behaviour, which allows for better avoidance.

Once the learning outcomes for a lesson have been identified, educators can then move to determining what type of assessments will gauge if the students gained the desired knowledge or skills from the lesson. Some very common assessment types are tests and surveys. When designing test and survey questions, Wiggins and McTighe explain that “thinking like an assessor boils down to a few basic questions” (2005, p. 150). They recommend using three basic questions, which can be found in Figure 3, as a guide to forming assessments. These questions help ensure that the assessments are gathering relevant information. The first asks the educator to think about what is the best action or task to use to evaluate the students. The second question helps establish “specific characteristics in student responses, products, or performance” that demonstrate completion of the desired goals (Wiggins & McTighe, 2005, p. 150). The last question pushes lecturers to think about how well the results of the assessment will accurately correlate with the learning outcomes. Wiggins and McTighe (2005) also emphasise that there should be multiple questions that cover each overarching goal either directly or indirectly. Their design principle and guiding questions provide a roadmap and base to developing effective assessments.

## Three Basic Questions for Designing Assessments

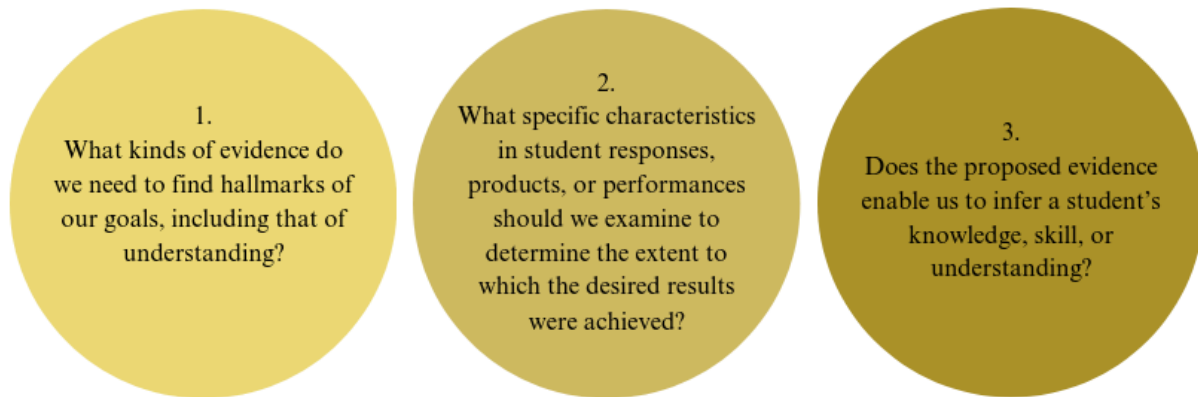


Figure 3: Three basic questions to guide designing quality assessments (Wiggins & McTighe, 2005, p. 150).

### 2.3.2 Concepts of Assessment Design

Once an educator has established their learning outcomes, they can move to developing their assessments. Wiggins and McTighe's (2005) Six Facets of Understanding can be used to create a checklist of items that lecturers may want to assess. These facets will reflect what students know and how students use the new knowledge they've gained. Wiggins and McTighe (2005) explain that if a student understands material, they should be able to explain, interpret, apply, see in perspective, demonstrate empathy, and reveal self-knowledge. Figure 4 goes into more detail of each of the six facets.

Based on which facets they want to measure, educators can decide on what type of assessment will be most relevant. Dixon and Worrell (2016) describe two types of assessments: formative and summative. Formative assessments "provide information to be used as feedback to modify teaching and learning activities" (Dixon and Worrell, 2016, p. 154). This assessment type looks to answer questions such as "What is working", "What needs to be improved", and "How can it be improved" (Dixon Worrell, 2016, p. 155). Formative assessments can be administered throughout the entire teaching process and are commonly low-stakes assignments. Examples of this include homework, self-evaluations, and observations (Dixon and Worrell, 2016, p. 154).

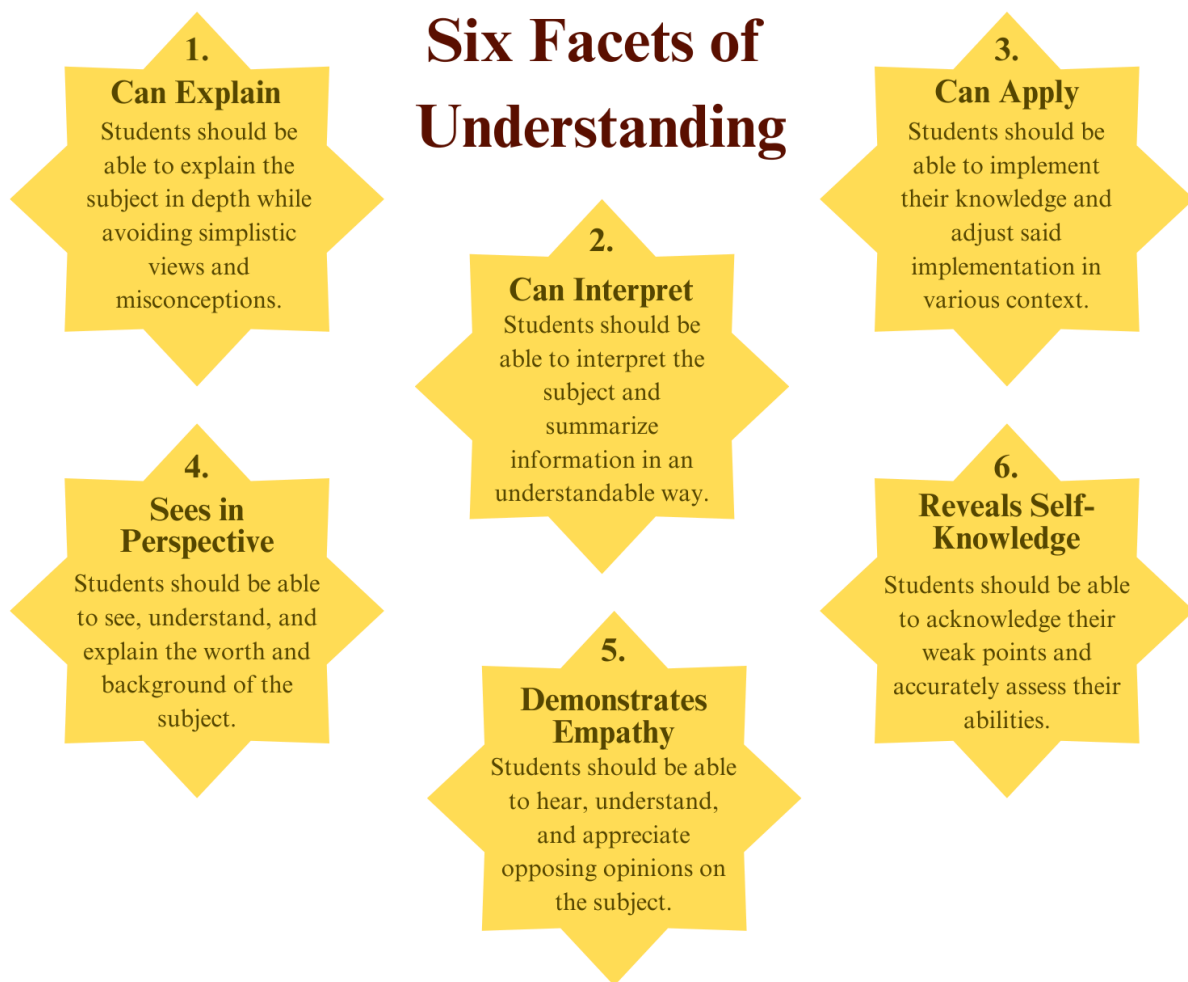


Figure 4: Six Facets of Understanding for Building Assessments (Wiggins and McTighe, 2005, pp. 163-164)

Summative assessments “intend to capture what a student has learned, or the quality of the learning” (Dixon and Worrell, 2016, p. 156). They inform lecturers on whether a student is ready to progress forward through the lesson or whether the student is placed at the right level. Summative assessments are administered at the end of the lesson or unit and are cumulative in nature. They are considered high-stakes assessments and often include “not only multiple choice questions, but also extended response items” (Dixons and Worrell, 2016, p. 156). Projects, papers, in-class examinations, and national testing are all examples of summative assessments.

With an understanding of the different types of assessments, an educator can then shift to choosing question formats. Haladyna and Rodriguez (2013) introduce many things to consider when developing questions such as objective versus subjective scoring, answer selection versus production, fixed-response versus free-response, and product versus performance. They also outline two common overarching question formats used in educational assessments. The first common format is called Selected Response (SR), which is “most suitable for measuring

knowledge of any cognitive demand (recall, comprehension, application)” (Haladyna & Rodriguez, 2013, p. 45). For SR questions, the directions are simple and the scoring is objective. They also “[offer] the greatest ability to make inferences on a population since all respondents consider the same options” (Haladyna & Rodriguez, 2013, p. 154).

The second common format is Constructed-Response (CR). This format “[provides] descriptive, but often divergent, information” (Haladyna & Rodriguez, 2013, p. 154). Unlike SR format questions, CR format questions can be split into two subcategories: objective and subjective. Objectively scored CR questions have correct answers that the instructors are looking for and can test knowledge that relate to mental skills such as describing, defining, and comparing (Haladyna & Rodriguez, 2013, p. 46). Subjectively scored CR questions can measure a student’s thought process, their ability to problem solve, and their performance on completing complex tasks (Haladyna & Rodriguez, 2013, p. 47). These questions do not have one correct answer and therefore require training to score consistently and accurately. Table 3 provides Haladyna and Rodriguez’s classification of survey items as SR or CR.

Table 3: Classification of Survey Items (Haladyna & Rodriguez, 2013, p. 153)

<b>Classification of Survey Items</b>	
<b>Selected-Response Items</b>	<b>Constructed-Response Items</b>
<ul style="list-style-type: none"> <li>- Multiple-Choice</li> <li>- Ranking</li> <li>- Rating Scale (Likert-style<sup>4</sup>)</li> </ul>	<ul style="list-style-type: none"> <li>- Numeric Response</li> <li>- Single, Short Response</li> <li>- List of Responses</li> <li>- Description or Elaboration</li> </ul>

### 2.3.3 Developing Assessments

Wiggins and McTighe (2005, p. 170) state that “in effective assessments, we see a match between the type or format of the assessment and the needed evidence of achieving the desired results.” The question format and type should match the information that the educator is trying to gain from the question. If the goal of the assessment is to gain basic facts about the students' understanding and skill level in a traditional quiz or test, an educator is likely to use Selected-Response (SR) questions and objective Constructive-Response (CR) questions. If an assessment is trying to reveal a deeper understanding amongst students, Wiggins and McTighe (2005) suggest subjective CR questions, performance tasks, and projects.

If lecturers are hoping to gain insight on how students have grown from the lesson, “a simple strategy is to make the first and last written assignments for any course the same question,

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<sup>4</sup> Likert scales utilise categories to rank the quality of something. They often have five to seven points which range from best to worst or high to low (Allen I. E. & Seaman C. A., 2007).



and require students to write a self-assessment post-script describing their sense of progress in understanding” (Wiggins and McTighe, 2005, p. 167). This strategy gives educators both comparable SR questions and a CR question that allows students to share how they feel that their learning is going. One last strategy to consider is from Haladyna and Rodriguez’s *In Developing and Validating Test Items* (2013). They recommend that “the first item must be easy to respond to, must apply to everyone, and be interesting enough to focus the respondent’s thinking directly on the topic of the survey” (Haladyna and Rodriguez, 2013, p. 185). Assessments should be able to keep students engaged, interested, and on topic throughout.

## Chapter 3: Methodology

The goal of this project was to evaluate the effectiveness of National FASD’s educational materials for young adults. We accomplished this goal through the following objectives:

1. Designed a pre-assessment and a post-assessment to test FASD knowledge.
2. Worked with lecturers to pilot National FASD’s lesson materials and implement testing with college students 16-18 years of age.
3. Identified receptiveness to the lesson and resulting changes in student knowledge and attitude.
4. Created supplemental educational materials to further student learning on FASD.

The methods chapter presents the design criteria, research questions, and methods by which we achieved those objectives. A visual representation of our objectives and methods is shown in Figure 5.

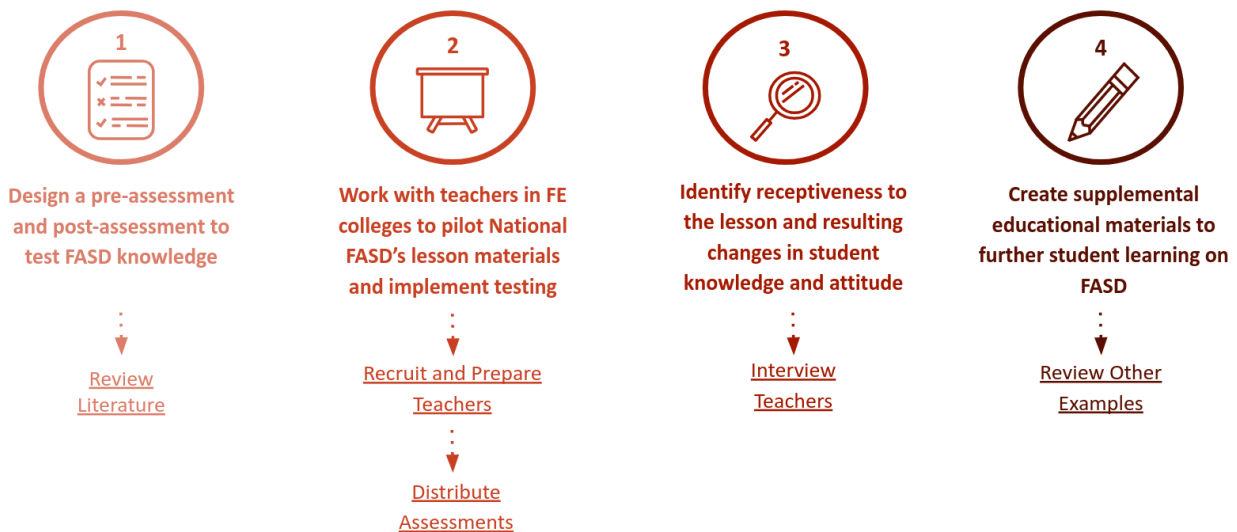


Figure 5. Methodology Map

### 3.1 Designing a Student Assessment Method and Consent Documents

An initial literature review of educational assessment methods, led us to design an assessment that included a summative component and a formative component. We decided to create a pre- and post-assessment, which is a common method for lesson assessments that focus on measuring gain in students’ knowledge (Sanders, 2019). We designed the pre- and post-assessment with the following criteria in mind:

- Questions should probe for knowledge and attitudes that are aligned with the key topics of the lesson.
- Questions and instructions should be easily understood by FE college students.
- The assessment should be easily implemented by lecturers: not being too time consuming or involving complicated logistics and distribution.

### 3.1.1 The Design Process

To start designing pre- and post- assessments, we reviewed the RISK lesson materials in detail and generated a list of key topics as shown in Table 4. This list included basic definitions and facts about FASD, corrected common misconceptions, and key concepts covered within the implemented RISK Film and lesson plan. After much revision, National FASD approved these key topics as the focus of the assessments.

Table 4: The Key Topics for Pre and Post Assessment

Pre-Assessment	Post-Assessment
<b>What do students think FASD is?</b> <hr/> <ul style="list-style-type: none"> <li>- Definition</li> <li>- Causes</li> <li>- Symptoms</li> <li>- Commonality</li> </ul>	<b>Repetition of Pre-Assessment Questions</b>
<b>Common Misconceptions</b> <hr/> <ul style="list-style-type: none"> <li>- FASD only happens from heavy drinking</li> <li>- FASD is rare</li> <li>- FASD is only physical symptoms</li> <li>- If the mother stops drinking mid-pregnancy, there is no harm</li> <li>- Only women with substance abuse problems have children with FASD</li> <li>- FASD is curable</li> <li>- A little wine is safe during pregnancy</li> <li>- Alcohol only affects the baby if the mother drinks in the third trimester</li> </ul>	<b>Student Mindfulness of Risk-taking after the RISK Film</b> <hr/> <ul style="list-style-type: none"> <li>- Drinking combined with sexual behaviour</li> </ul>
	<b>Student Feedback on the Lesson</b> <hr/> <ul style="list-style-type: none"> <li>- Knowledge gained</li> <li>- Relevance</li> <li>- Any resulting questions</li> </ul>

The purpose of the two assessments was to gauge prior knowledge of the topic and test the knowledge gained from the lesson. The pre-assessment is designed to determine the baseline of the students' knowledge before going through the lesson. The post-assessment asked the same questions as the pre-assessment. The parallel between the pre- and post- assessments allows us to make direct connections when evaluating how the lesson impacted the students' knowledge about prenatal alcohol exposure and FASD. A few additional mindset-based and feedback questions at the end allowed us to get information on students' perception of the lesson.

The pre- and post- assessments are a collection of open response, multiple choice, true or false, and Likert-style questions. The open response questions gather student knowledge on foundational questions such as “What is Fetal Alcohol Spectrum Disorder (FASD)?” and “What are the effects of FASD on people who have the disorder?” We also used open-response questions at the end of the post-assessment to gather feedback on the lesson itself. The multiple choice and true or false questions were used to gauge students' knowledge on FASD facts and misconceptions regarding the disorder. The Likert-style questions were used to gauge student reception and get feedback on the lesson.

Throughout the design process, we worked extensively with the National FASD as well as a local research consultant to revise the survey questions. We used their advice to better cater towards the target audience: 16-18 year old FE college students at educational levels 2 or 3. Some of the revisions that we made included simplifying language and switching terms from American English to British English. One of the major points for revision was the time required to complete each assessment. The final assessments had only two open-response questions with the rest of the content shifted to close-response questions. Using a small test group of United States university students, we found that the pre-assessment took about five minutes to complete and the post-assessment took about eight minutes to complete. The finalised pre- and post-assessments can be found in [Appendix A](#).

We used Qualtrics to digitise the pre- and post- assessments. Students were able to access the pre-survey but were prevented from moving forward to the post-survey by a password. When the lesson wrapped up, the students were given the password and moved to complete the post-assessment. This allowed us to easily connect students' pre- and post- responses for comparison.

### **3.1.2 Protecting Rights of Research Participants**

When developing the student assessments, we considered ethical and legal obligations to protect the rights of students and lecturers as research participants. The Worcester Polytechnic Institute Institutional Review Board reviewed and approved our research plans. Because only health-related lecturers piloted the lesson, we were granted an educational exemption. A UK research consultant reviewed the research plans to ensure they were in compliance with UK General Data Protection Regulation (GDPR). The surveys were completely anonymous limiting

the amount of personal data collected. Additionally, we tailored the language used throughout the assessments to be mindful of the sensitivity of the subject. For example, the questions asking about student attitudes were not asked directly about their behaviours or health status but rather about the demographic as a whole.

To ensure that all study participants were properly informed, we wrote a lecturer consent form with key information on the study. This form was designed to be signed by the lecturer and returned or verbally consented to. We also wrote a summarised verbal consent script to read at the start of any interviews. The lecturer consent forms, both written and verbal, can be found in [Appendix B](#). The consent agreement introduces the National FASD as the study host, purpose, tasks, expected time commitment, and planned data usage in the final report. It also covers GDPR compliance surrounding the storage and disposal of audio recording and personal identifying information.

We also created a student study information sheet that explains the purpose of the study and how students will not be negatively impacted for their participation or lack thereof. The full student study information sheet can be found in [Appendix C](#). To assure that all student participation was consensual, we emphasised that completion of the assessments was entirely voluntary and that they could choose to skip any questions they may not feel comfortable answering.

## **3.2 Piloting the Lesson**

We decided that the most appropriate people to pilot the RISK lesson with FE college students would be lecturers in the Health and Social Care departments. In this section, we describe the recruitment methods we used and how we prepared the lecturers to deliver the lesson and collect data from students. This is the first level of data collection which helped us evaluate the lesson plan specifically in terms of student receptiveness and learning.

### **3.2.1 Recruiting Lecturers from FE Colleges**

To recruit lecturers, we utilised two main methods: convenience sampling and snowball sampling. National FASD connected us with two lecturers in Northern England who had already expressed interest in working with us. The first section of [Appendix D](#) includes the email we sent to these lecturers to introduce the project in more detail, link the RISK lesson plan, and ask to set up an initial meeting. We then used snowball sampling by asking these lecturers to recommend others who may be interested in our research. Snowball sampling yielded one additional lecturer.

We also attempted to connect with lecturers in nursing or other health related fields in the London area. To do this, we called all the 25 FE colleges registered in London that had health and social care programmes. [Appendix E](#) shows the script we used when calling schools. Eleven

of them asked us to send the information on the lesson in an email which can be found in the second part of [Appendix D](#). Unfortunately, none of these contacts resulted in additional lecturers.

### **3.2.2 Preparing Lecturers for Lesson Delivery**

Along with sending the lecturers the lesson material, we requested an online introductory meeting. The meeting covered the following:

1. Key concepts of the lesson plan: We started the meetings by asking the lecturers if they had any questions on the information we sent in the email. We then briefly went over the lesson plan and how the pre-assessment and post-assessment fit into it.
2. Lesson Implementation Instructions: We talked through our recommendations for how to implement the lesson and showed the Lesson Instruction sheet which can be found in [Appendix F](#). This sheet gives guidance on how to provide students the necessary information about the study, including the distribution of the Student Study Information Sheet found in [Appendix C](#).
3. Pre- and Post-Assessment Data Collection: We confirmed with the lecturers that the students could take the assessment digitally and informed them that we could send the data back in a spreadsheet on request.
4. Student and Class Information: We concluded by asking the lecturers some demographic and knowledge questions about the class and the students who might participate. These questions can be found in the first section of [Appendix G](#).

After the initial meeting, we sent emails to the lecturers that contained the Lesson Instruction Sheet, the pre-assessment and post-assessment in digital and paper form, the Student Study Information Sheet, and the Lecturer Consent Form, which can be found in the Appendices.

## **3.3 Analysing Lesson Effectiveness and Areas for Improvement**

We used information from both lecturers and students to characterise lesson effectiveness and areas of improvement. In this section, we first provide details on how we sought feedback from lecturers. Then, we explain the methods by which we analysed the student pre- and post-assessment data.

### **3.3.1 Incorporating Feedback from Lecturers**

From lecturers, we wanted to learn:

- How did they deliver the lesson? What changes, if any, did they make in the lesson?
- How successful was the lesson in engaging students and prompting participation?

- What were lecturers' opinions of the quality of the lesson and assessment? Did they suggest areas for improvement?
- What is the feasibility of long-term implementation of the lesson in the national curriculum?

After the lecturer piloted the lesson plan, we interviewed them through various virtual meeting platforms, with the semi-structured interview guide in the second section of [Appendix G](#). Throughout the interview, a copy of the lesson materials was used to clearly communicate which sections of the lesson we were referencing.

Initial questions determined if they were able to complete all lesson components or if they deviated from the lesson guide and where. This information assists in noting any information that may have an effect on the data collected, such as if there is a gap of knowledge due to skipping materials or alterations in engagement if not all materials were shown. Later questions focus on the lecturer's evaluation of student engagement with the lesson. This information helped to form a wider perspective of student receptiveness and interest in the topic when interpreted with the student assessments. The final questions helped collect feedback on the lesson content, the ease of implementation, the flow and quality of the lesson materials, and any information or material they thought would be helpful to add to reinforce topics.

The interviews were 20 to 30 minutes in length and done in teams of two, where one person conversed with the lecturer and the second took notes on the conversation and observed reactions. After getting verbal consent from the lecturer, the audio was recorded, transcribed, and stored in compliance with UK GDPR guidelines. In pairs of two, we analysed the produced transcripts for key themes in the conversation and compared them to create a final summary. These summaries were then compared to other lecturer interview summaries to find common themes in lecturer feedback.

### **3.3.2 Assessing Changes in Student Knowledge**

We obtained 38 paired responses from students and a total of 41 responses across all three classes that participated in the lesson. We wanted to analyse these student data to learn:

- Did participation in the lesson increase students' knowledge about FASD and the risks of prenatal alcohol exposure?
- Did the lesson alter students' perception or mindset surrounding FASD / alcohol / unsafe sexual behaviour?
- Did the lesson seem engaging and understandable? Where? Where did it not?

To answer these questions, we used the following analysis methods:

1. Descriptive Statistics: For all closed-response knowledge questions, we calculated the percentage of students who correctly answered on the pre-assessment and post-assessment. For the Likert-scale questions on the post-assessment, we calculated percentages of how many students took each stance on the topic.
2. Coding of Open-Response Questions:
  - a. For questions that had objectively correct answers, such as defining FASD and its effects, the student responses were individually categorised as High Quality, Medium Quality, and Low Quality. All individual team members categorised the responses and compared their gradings to finalise the score, according to the rubric in [Appendix H](#). The responses for the pre-assessment and post-assessment were categorised independently of each other.
  - b. For questions that did not have objectively correct answers, such as asking for feedback on the lesson content, the student responses were coded for key themes and ideas, as shown in the coding sheet of [Appendix H](#). The responses were coded in teams of two and were agreed on by the entire team.
3. Kruskal–Wallis Test: This statistical test (Carrascosa, 2024) was used to check whether the three sets of data from the pre-assessment were different from each other. Differences may be possible due to the class level, background knowledge of the students, if the class had previously learned about FASD, how the lecturers implemented the lesson, or alternate factors. The test is non-parametric, meaning it requires no assumptions to be made about the data, which allowed for open analysis of all student data collected (Carrascosa, 2024).
4. Wilcoxon Signed-Rank Test: This statistical test (Carrascosa, 2024) was used to determine if the student knowledge scores before and after the lesson had statistical significance, or if the change in student knowledge is attributed to more than chance alone. This test is non-parametric, which allows for comparison across all student pre-assessment and post-assessment scores for the student population regardless of their distribution.

### **3.3.3 Limitations**

We encountered limitations that are a result of the student assessments. The pre- and post-assessments that we designed were not formally tested for validity and reliability. We largely relied on the students completing the assessments honestly and putting at least some effort into completing the assessment and participating in the lesson. For example, there is a possibility that students guessed on the true-false questions to try and get a higher score even if they did not know the correct answer, which would incorrectly portray knowledge. In addition, some of the



post-assessment responses could have been affected by social desirability bias. Social desirability bias is a tendency for respondents to answer as they believe others would expect them to, rather than provide their true answer. For instance, one of the questions asks if the students would share their concern with a friend if they saw them participating in risky behaviours related to prenatal alcohol exposure. Students may have recognised what people looking at their response might want to see and felt pressured into agreeing with the statement. Moreover, we gauged student participation and engagement through a second-hand account from the lecturer, which may be less reliable, as we did not observe the lessons that took place.

### **3.4 Designing Supplemental Education Materials**

The final objective was designing supplemental materials so that the students can have something to take away from the lesson. National FASD asked that we create a physical asset, such as a pamphlet, along with a digital version that can be accessed online. We sought to meet the following design criteria:

- Design should appeal to the target audience age 16-18
- Design and information should be comprehensive without needing the lesson
- Information should be relevant to the target group age 16-18
- Information should align with and reinforce the ideas taught from the lesson

Designing a pamphlet or leaflet prompted us to do some additional literature review. We looked at other examples of National FASD materials to use as a guide when we started creating our own. We aimed to keep the material informational and simple, opting to use more graphics than text. We also looked into PSHE Association standards for guidelines on what is deemed important for students in the UK to be aware of when it comes to sexual education. We understood that even though there is not anything explicitly mentioned when it comes to safely consuming alcohol during pregnancy, it served as a solid baseline for what information we should be including. We also reviewed the *FASD: Preferred UK Language Guide* (The Seashell & National Organisation for FASD, 2020) in order to use the most inclusive and least stigmatising vocabulary.

We made decisions about the brochure content based on the student assessment data and noteworthy points the lecturers mentioned in the post-lesson interviews. We also drew on National FASD's existing resources that aligned with student and lecturer suggestions for additional content. We made sure to add content that would address common misconceptions and introduce prenatal alcohol exposure and FASD even if it was already covered in the lesson. Ultimately, the main idea was to make sure the concepts from the lesson have a lasting impact on the students.

## Chapter 4: Findings

This study showed that the RISK lesson is effective in fostering student learning about the risks of prenatal alcohol exposure and FASD. This chapter begins by depicting student performance, knowledge, and attitude towards FASD using data from the assessments. We then report the lecturers' perspectives on implementation and student engagement during the lesson. Lastly, we draw general conclusions by comparison of student and lecturer data.

### 4.1 Student Learning and Receptiveness to the RISK Lesson

This section begins by reporting student knowledge and learning from the lesson by analysis of open-response and closed-response questions on the pre- and post-assessment. The section continues by reporting student feedback on the lesson's quality and impact from rating scales and open-response questions on the post-assessment. Finally, it ends with a discussion on the limitations surrounding student data analysis. The student data can be found in [Appendix I](#).

#### 4.1.1 Student Learning

##### **Students' knowledge and understanding of FASD increased after taking the lesson.**

After participating in the lesson, more students were able to correctly answer questions regarding prenatal alcohol exposure and FASD. The average correctness score for closed-response assessment questions was 7.2 out of 12 points before the lesson and 10.1 out of 12 points after the lesson (Figure 6). Additionally, 95% students had a higher score on the post-assessment than the pre-assessment, while 5% retained the same score. The Wilcoxon Signed-Rank Test, which tested the paired student responses for a statistically significant change in score, revealed a significant difference,  $z = 5.3$  and  $p < 0.001$ . These results suggest that the lesson advanced students' knowledge about prenatal alcohol exposure and FASD.

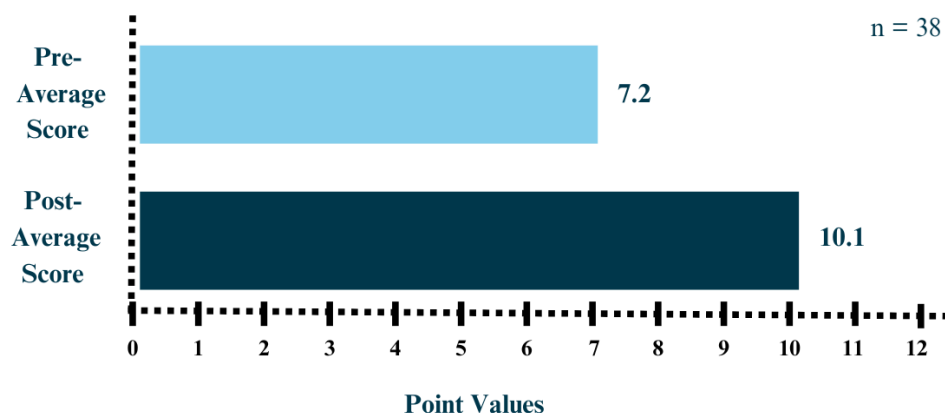


Figure 6: The average correctness score of the selected-response knowledge questions, where each question is worth one point for a total of 12 points.

After participating in the lesson, students provided more detailed and accurate definitions of FASD and its effects. Figure 7 shows student responses categorised by low, medium, and high response criteria. For the first open-response question, “What is FASD?”, 29% of students answered in the low category before the lesson, whereas only 8% of students answered in the low category after. For the second question, “What are the effects of FASD on people who have the disorder?”, 58% of students responded with a low quality answer before the lesson while 29% of students provided a low quality answer after the lesson. For the same question, 50% of students provided a high quality answer after the lesson, whereas 16% of students initially answered in the high category. This change demonstrates that students had a deeper understanding of FASD after the lesson.

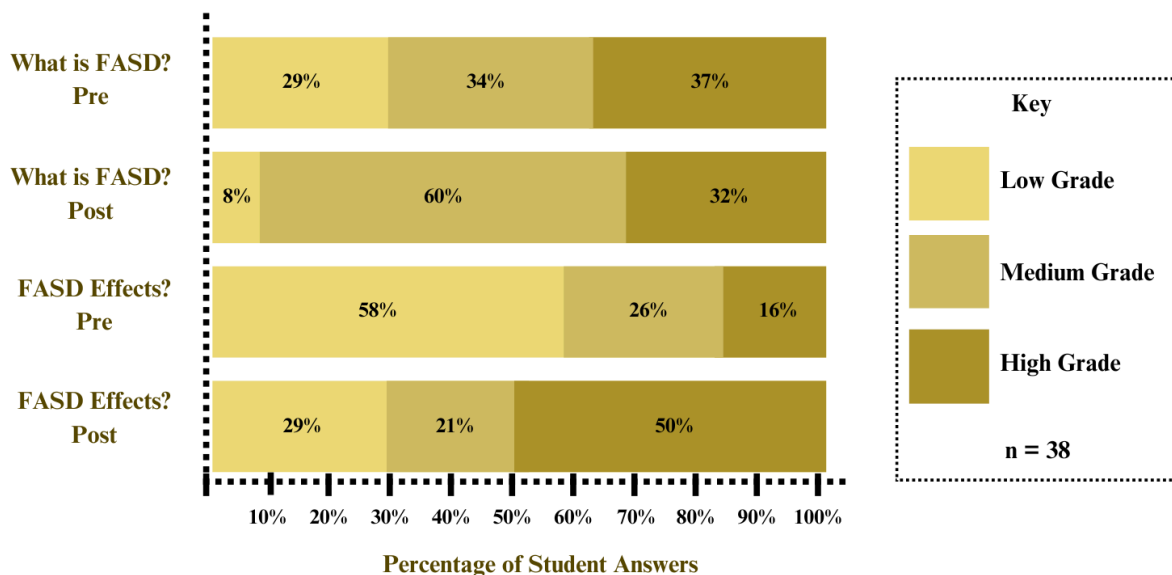


Figure 7. The percentage of student open-responses that met low, medium, and high criteria for knowledge about FASD on the pre-assessment and post-assessment.

**Students exhibited considerable knowledge gains relating to some common misconceptions.** For the questions probing common misconceptions, many more students tended to answer correctly on the post-assessment. Figure 8 shows the four questions with the greatest knowledge gains. Students demonstrated a knowledge gain in identifying that FASD is a concern even if a pregnant woman does not binge drink. Roughly half of students, 53%, correctly answered before the lesson, while 82% correctly answered after. Similarly, the concept that even one alcoholic drink could cause harm during pregnancy had the highest student knowledge gain overall. Only 40% of students correctly identified this concept initially, whereas 92% correctly answered after the lesson. Another misconception is that FASD only has physical symptoms, which 74% of students determined to be incorrect before the lesson. After the lesson, 97% of students identified this as false. Finally, students showed a better understanding of the prevalence

of FASD in the UK. While only 37% of students initially identified that the rate of FASD was higher than autism in the UK, 74% correctly answered on the post-assessment.

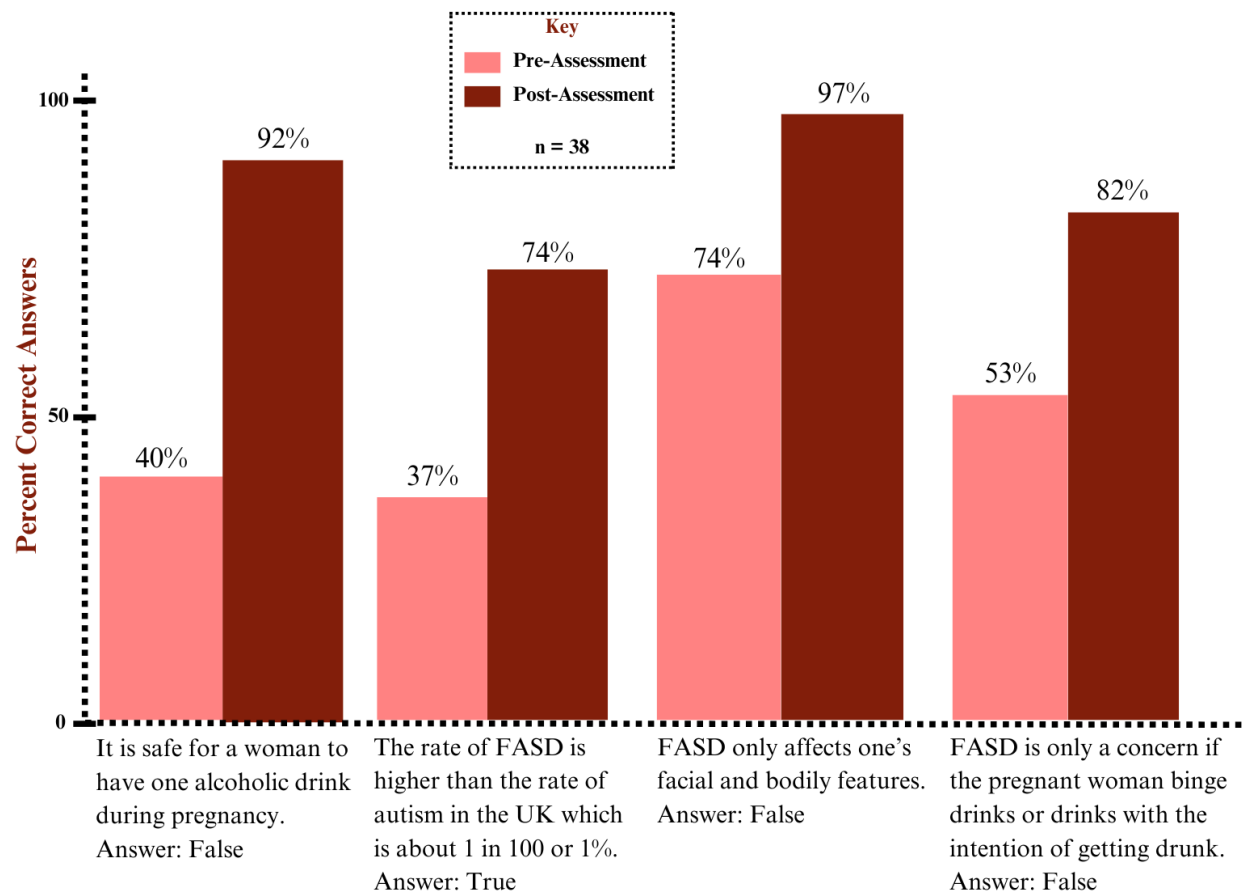


Figure 8: The percentage of students that correctly answered the pre- and post-assessment questions, demonstrating high knowledge gains.

**Some concepts of the lesson were not well understood by students.** Figure 9 highlights assessment questions that had a low correct response rate on the post-assessment or little change in knowledge across the pre-assessment and post-assessment. For example, one question asked students to compare the long-term harmfulness of heroin and alcohol to a developing foetus. Before the lesson, only 3% of students correctly answered that alcohol was more harmful to the foetus. After the lesson, only 53% of students correctly answered, indicating that confusion may remain. This confusion could be due to the illegal nature of heroin and the general perception that heroin is more harmful than alcohol to a person. Another example is that 40% of students initially identified that a pint of beer possesses similar risk to a shot of a spirit, while only 58% of students correctly identified this after the lesson (Figure 9). Similarly, 68% of students correctly answered that the majority of young adults do not know about the risks of FASD on the pre-assessment and 82% correctly answered on the post-assessment (Figure 9). These questions

regarding the risk of various alcohol types and lack of youth awareness demonstrate little change in knowledge from students, suggesting that the lesson was not as effective in addressing these points.

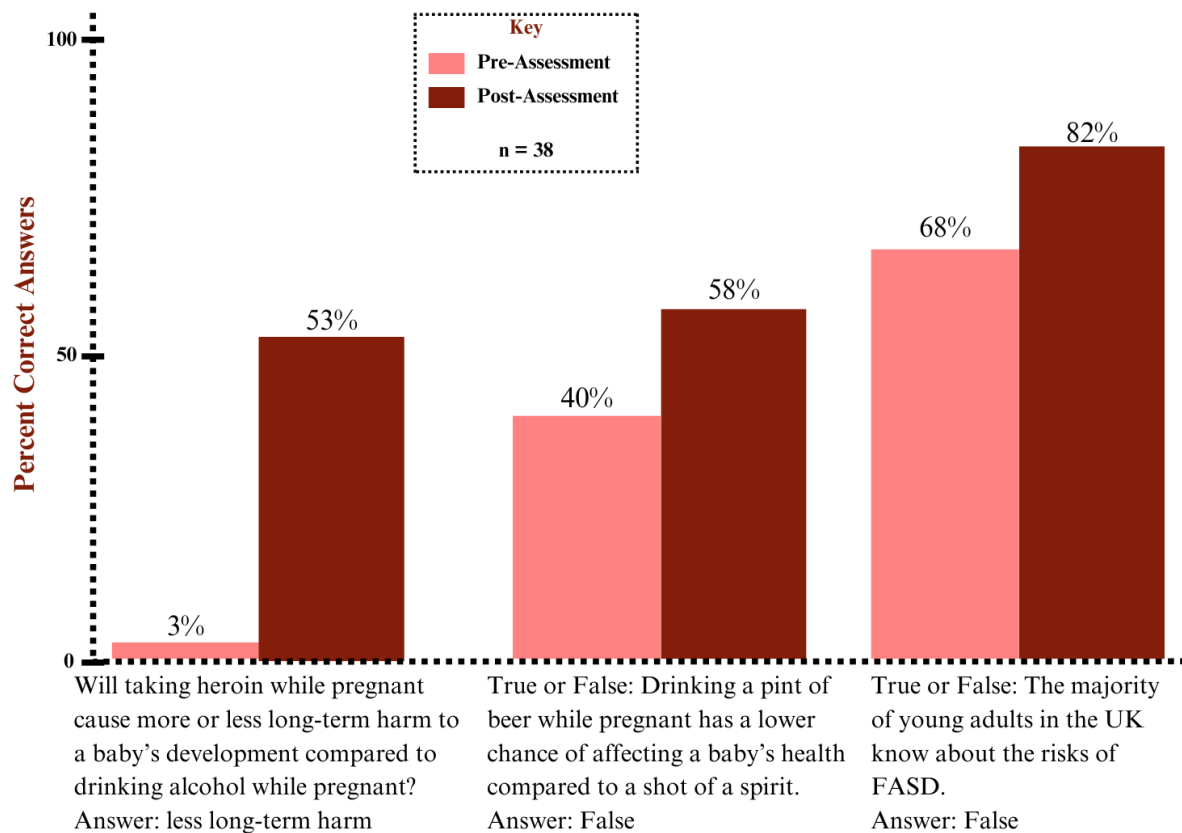


Figure 9: Questions with low correct response rate on the post-assessment or with small improvements in knowledge from the pre- to post-assessment.

#### 4.1.2 Content and Lesson Materials

**A majority of students reported that the lesson was educational.** Sixty-nine percent of students somewhat or strongly agreed that this lesson taught them something new about FASD. Furthermore, 66% of students somewhat or strongly agreed that the lesson cleared up a misconception about FASD. This data is shown in Figure 10, which displays student feedback to Likert-style questions that gauged their perspective on the lesson and its implementation. In open-response feedback on the post-assessment, many students cited the correction of common misconceptions as the biggest thing they learned. Many students highlighted topics such as “how 1 drink can make such a difference” and that “[FASD] is more common [than] you think”. Others reported that learning additional information was impactful, such as that the disorder is lifelong, there are a wide range of symptoms for those who have FASD, and that alcohol is more dangerous than heroin to a developing foetus.

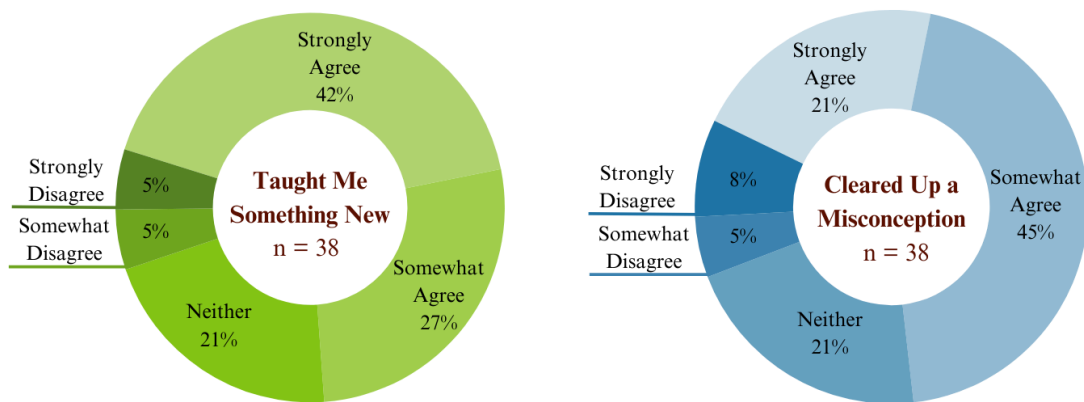


Figure 10. The percentage of student responses to Likert-style questions for feedback on learning.

**Students' attitudes may have shifted as a result of the lesson.** After the lesson, 74% of students somewhat or strongly agreed that the lesson prompted them to think more about the risks of sexual activity and drinking (Figure 11). Students also reported being willing to share their knowledge of risky behaviours that could lead to FASD with people they knew. After students had the lesson, 95% somewhat or strongly agreed they would share their concern with a friend who was engaging in these risky behaviours (Figure 11). A limitation of these results is that the questions could be prone to social desirability bias, or students answering according to what they believe others would want them to. Although we do not have definitive evidence, this response data suggests that the RISK lesson might move some students from “pre-contemplative” to “contemplative” stages of behavioural change (Raihan & Cogburn, 2023).

**Students found the lesson content was relevant to their age group.** Eighty-four percent of students somewhat or strongly agreed that the lesson content was relevant to their age group, as depicted in Figure 11. Multiple students commented that tendencies to drink, party, and have sex at their age made the lesson most relevant to them. Others mentioned that it was important to understand the potential risks of their actions, whether those actions are happening now or in the future.

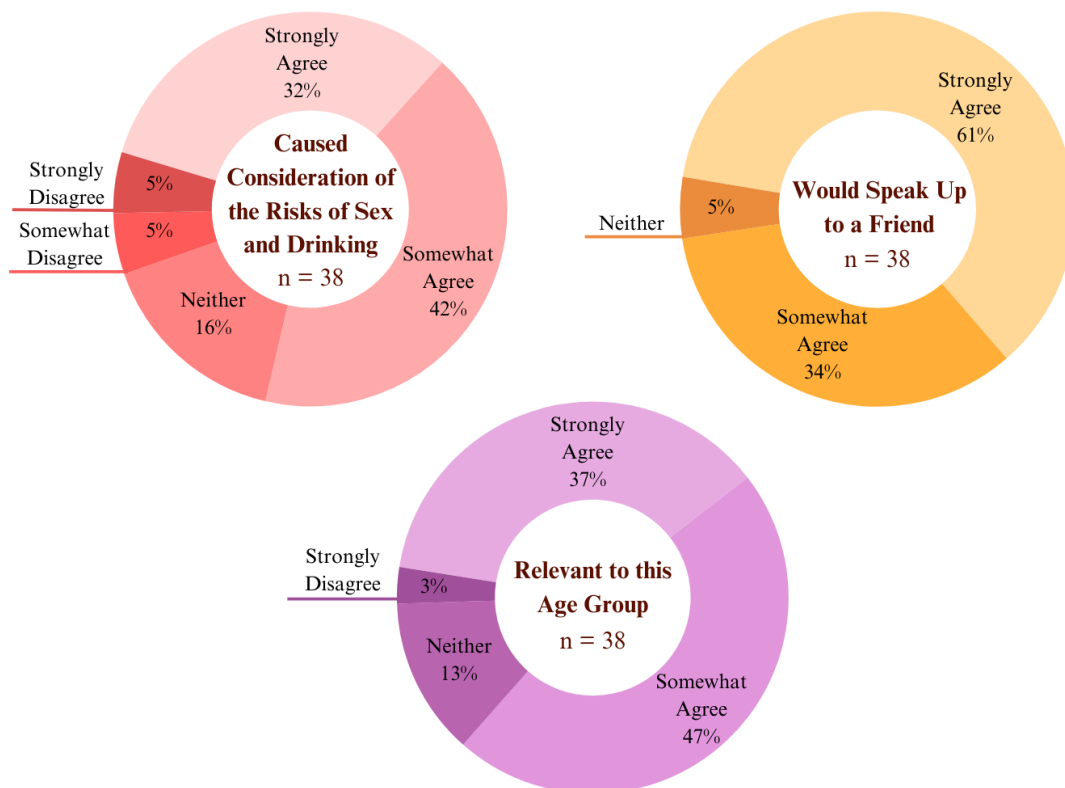


Figure 11. The percentage of student responses to Likert-style questions for feedback on the impact of the lesson.

#### **The students that gave suggestions for the lesson recommended additional content.**

All of the student responses that provided feedback on the lesson were focused on increasing the amount and range of content taught about FASD. Students suggested including further information on how symptoms correlate with the amount of drinking and what treatments are available for those with FASD. Others indicated interest in real life examples of those who have FASD. A student who received the 60-minute lesson from Lecturer 2 specifically noted that the “[one hour] lesson was not very in depth.”

### **4.1.3 Limitations**

When analysing the data from the assessments, we were mindful of certain factors that may influence how we should perceive the data. For instance, all of the classes that this lesson was piloted in were health & social care classes. This meant that the students may have been more receptive to the lesson compared to students who are not studying health & social care. Additionally, the students may have been more likely to deduce a correct answer on a pre-assessment due to their health background knowledge. On a similar note, the students were 90% female, which could affect the conclusions on how relatable the lesson is to the 16 to 18

year old population as a whole. Some of the classes also had lessons on FASD previously, which could have influenced the student’s perspective and engagement. Despite this, we did not need to consider their previous understanding in the assessment of their knowledge growth. The results of The Kruskal-Wallis Test indicated there was no significant difference between the initial knowledge levels of students in the three classes,  $H(2) = 0.7$  and  $p = 0.706$ .

## 4.2 Lecturer Perspectives on the Lesson

In this section we report the opinions on implementation from the lecturers. The summaries of the lecturer interviews can be found in [Appendix J](#). Then, we present findings on how the lecturers perceived student receptiveness and engagement with the lesson. Table 5 shows information on the lecturers that piloted the lesson and differences in how they implemented it.

Table 5: Key Lecturer Information and Implementation Choices

Lecturer Number	Lecturer 1	Lecturer 2	Lecturer 3
College (Northern England)	College 1	College 2	College 1
Class Size (Students)	14	16	15
Class Level	Level 2	Level 3	Level 3
Prior FASD Lesson Taught	No	Yes	No
Lesson Length	90 min	60 min	60 min
Video Length	Long (11 min)	Long (11 min)	Short (8 min)

### 4.2.1 Implementing the Lesson

**Lecturers found the lesson plan comprehensive and suitable for a variety of classes.** The lecturers generally described the lesson implementation as being simple and understandable. They all claimed to have been able to follow the lesson plan closely. Lecturer 3, in particular, felt that “it had been planned in a way that it was quite easy to pick up and deliver with students.” Lecturer 2 gave a similar response, as they thought that “anyone really, without having much knowledge [on FASD], would be able to follow that plan.” Lecturer 1 was on the busier end and claimed to not have had much time to go through the lesson plan, but they still found the lesson to be “easy to follow.” Lecturer 1 was the only one to implement the 90-minute lesson plan, which is more detailed and would require more time to review. One last point of feedback was



that the lecturers appreciated the content warnings embedded in the lesson plan since they recognised the sensitivity of the topics. Lecturer 2 noted the content warnings for certain slides were helpful and Lecturer 3 highlighted the resources in the lesson for those who may need extra support after the lesson.

#### **4.2.2 Content and Student Participation**

**Lecturers found the content suitable and impactful for the age group.** During the moment in the film when the pregnancy is revealed, all lecturers reported the students being surprised. Lecturer 2 brought up that “there were great gasps at that point.” Both Lecturer 1’s and Lecturer 3’s classes also found the risk comparison of drinking alcohol to taking other harmful substances, specifically heroin, during pregnancy to be the most impactful fact in the lesson. Likewise, Lecturer 2 felt the analogy of comparing one drink to one round in the ring was extremely helpful in having their class understand the purpose of the lesson and risk discussions. They even mentioned being willing to “steal elements from [this lesson] for [their] lesson next year.” Additionally, Lecturer 1 talked about the age group of the students and said that “probably within the next five to 10 years they might, well, be having babies.” Thus, when it comes to the risks of prenatal alcohol exposure, they believe that “it’s an important thing for all students of this age range, male and female, to have that awareness about it.”

**Lecturers noted good student participation in discussion and found that most discussions were well received by students.** Lecturer 2 found that the first conversation, regarding the risks of crossing the road, confused the students. Despite this, students seemed to be engaged with the rest of the discussions. When it came to discussions about the choices of the pregnant woman in the film, lecturers reported high levels of student engagement, especially during the discussion about the risk of being a fighter while pregnant. Lecturer 3 said that the pregnancy revealed in the film prompted their class to discuss that a lot of pregnant women “don’t necessarily know the risk on a day to day basis of maybe what they’re actually doing in terms of how that might harm the baby.” The discussions their class had were also much more extensive than the lesson guide anticipated, since they noticed the discussions often ran longer than the guide had estimated. Lecturer 2 observed that when it comes to “anything person-related, they’re immediately more engaged, and they want to talk about it a bit more.” One interesting thing was that one student, from Lecturer 2’s class, was more engaged in the discussions in this lesson than they had been before. In Lecturer 2’s own words: “when [they’d] seen the video, [they] actually discussed more than I’ve ever seen [them] in the past, which is really interesting because I wouldn’t have anticipated that.” A similar occurrence took place in Lecturer 1’s class as well. They reported that one of their male students felt strongly about how men should be more supportive of making safer choices if their partner is pregnant. The student said things along the lines of ‘Yeah, they should support them. They shouldn’t drink either.’

**Some portions of the lesson were less effective in keeping the students engaged.**

Lecturer 3 brought up how there were a lot of discussion points in the beginning, but less activities to engage the students towards the end. They claimed “there was quite a lot of, like, information overload.” Lecturer 1 also reported at the end of the lesson “[some students] were, like, doing a bit of clock watching.” As mentioned previously, the discussion of risks taken on a day-to-day basis at the beginning of the lesson was not as fruitful in Lecturer 2’s class compared to the other discussion points. In the lecturer’s own words, “later a few of [the students] were saying, ‘Oh I didn’t really get what that had to do with FASD’” and that “maybe [the students] just weren’t able to get those two links there.” Lecturer 2 also noted that much of the introduction in the RISK film, such as the training montages, appeared “superfluous” to what was being taught. Lecturer 2’s critical reaction to the lesson could be because they had previously taught their class about FASD, which may have made a lot of the beginning section feel redundant. When looking at Lecturer 3’s class, who had not learned about FASD, they said that the conversation about risks taken on a daily basis was their favourite discussion point. Lecturer 3 appreciated “how it kind of went from kind of a career, what she was doing, and kind of it being a secret, and all of a sudden this big, grand reveal.” Additionally, Lecturer 3 said the discussion points between sections were useful to “have a little bit of sit, think back before the next video was played.” Furthermore, Lecturer 1 reported that there were not any moments in the lesson they felt were less effective, but highlighted that it may be because their class is comfortable discussing with each other.

### **4.3 General Response to the Lesson**

**The lesson was engaging and successful in getting the message across about the risks of alcohol consumption during pregnancy.** The lecturers brought up the effectiveness of discussing the comparison of one round of drinks to one round in the ring. Numerous students also reported that the most impactful thing they learned was how a single drink can be risky. This success may be attributed to how impactful the film was on the students, as seen by the various surprised reactions to the reveal of the pregnancy. Lecturer 3 also highlighted the reveal as being “good for visual representation for students to understand.” On a similar note, Lecturer 1 felt that the slide with the body diagram helped get their students to think about the damage that can result from prenatal alcohol exposure and the “impact on the different [stages of] development and the different parts of the body.”

**Both lecturers and students indicated an interest for more content.** Both groups brought up the potential to include the experience of someone with FASD. Lecturer 2 noted in prior lessons, their students had enjoyed hearing about what it is like to live with FASD. Likewise, a student response mentioned wanting to learn more about real life examples. Other student responses also requested to include material on the treatment or management of FASD. Aside from interest in the disorder, Lecturer 3 mentioned wanting to hear about statistics

regarding knowledge and rates of FASD in other parts of the world. They thought it would give the students a general idea of where the UK is at when it comes to FASD awareness. They mention the United States specifically, claiming that “it's more kind of known about in America than it is currently within the UK.”

## Chapter 5: Supplemental Materials and Recommendations

This chapter introduces the trifold brochure and digital leaflet that we created for students to take away after the lesson. We also provide recommendations informed by the findings of this study. The recommendations include possible improvements to the lesson, as well as a recommended accreditation that will help bolster credibility of the lesson.

### 5.1 Supplemental Material: Trifold Brochure and Digital Leaflet

We created a leaflet designed to reinforce concepts from the lesson or act as a stand-alone informational brochure. Both full versions of the leaflet, a trifold brochure and a downloadable PDF leaflet, can be found in [Appendix K](#). The material is titled “Drinking, Sex, and You” and includes an illustration of alcohol and condoms. These elements, which can be seen in Figure 12, are meant to draw the attention of teen audiences and persuade them to read further. The bright colours used in the pamphlet are intended to pull the reader's attention and be consistent with colours in National FASD’s logo.



Figure 12: Title and Cover Imagery of Supplemental Material

Sections such as “Alcohol and Pregnancy” and “What is FASD?” include information that is taught in the RISK lesson in order to reinforce these key concepts and help students recall what they learned. These segments cover the risks of drinking alcohol in pregnancy and the harm that alcohol can do to a developing foetus, as well as what FASD is and some of the symptoms of the disorder. Another section of the leaflet shown on the left side of Figure 13, titled “Life with FASD”, responds to feedback from lecturers and students who wanted to know more about lived

experiences of people with FASD. This component includes quotes from a young adult with FASD to give readers insight on what it is like to live with the disorder. Figure 13 also shows the “Resources” section of the leaflet, with QR codes that link to sites that students can explore for more information on a variety of topics. Some of these sites include National FASD’s website, the “Me and My FASD” site that shares stories from people with FASD and provides support for those who have FASD, and the “Prevent FASD” website that promotes living a healthier lifestyle with alcohol.



Figure 13: Lived Experience Example and Additional Resources from the Leaflet (*Bailie is great at sports*, 2021)

Lastly, the common misconceptions section (Figure 14) covers five misconceptions that people may have about prenatal alcohol exposure and FASD. The student data revealed that the majority of questions addressing these five misconceptions had a low initial understanding. Additionally, some students identified these misconceptions as commonly held among their peers or as the key fact that they learned from the lesson. The fourth myth, “A little wine is safe during pregnancy,” touches on the misconception that having one drink while pregnant is safe. A question that covers this topic on the pre-assessments had only 40% of students answer correctly.

Common Misconceptions				
<b>Myth:</b> FASD only occurs when the mother is a heavy drinker.	<b>Myth:</b> Symptoms of FASD are purely physical.	<b>Myth:</b> It's safe to drink at the start of the pregnancy.	<b>Myth:</b> A little wine is safe during pregnancy.	<b>Myth:</b> FASD is a curable disorder.
↓	↓	↓	↓	↓
<b>Truth:</b> FASD can occur from any level of alcohol consumption during pregnancy.	<b>Truth:</b> Most people with FASD have no physical signs and only mental symptoms.	<b>Truth:</b> There isn't a time where it's safe to drink during pregnancy.	<b>Truth:</b> No amount of alcohol during pregnancy is safe.	<b>Truth:</b> FASD is treatable, but also a lifelong condition.

Figure 14: Five Common FASD Misconceptions

## 5.2 Lesson Improvements and Implementation Recommendations

We offer the following recommendations for the RISK lesson based on the findings of this study.

**The RISK lesson is best suited as an introductory lesson about prenatal alcohol exposure and FASD, and may not be engaging for those with prior knowledge.** A lecturer who had previously taught FASD found the introduction to the lesson to be “superfluous.” Multiple students from that class stated that the lesson was not as in-depth as they would have preferred. However, the lecturers who had not previously taught FASD material reported high levels of engagement throughout the lesson. Additionally, we found that most students from those classes did not report wanting more content within the lesson. Therefore, we believe that the National FASD should consider advertising that the RISK lesson is intended to be an introductory lesson to prenatal alcohol exposure and FASD.

**We recommend that National FASD consider adding at least one interactive activity towards the end of the lesson.** The discussion sections earlier in the lesson were found to be helpful in keeping the students engaged in the topics. However, after these discussions in the first few slides, interactivity noticeably dropped. The lecturers noted that the end of the lesson was an “information overload” and could be made more digestible. An activity could improve the flow of the lesson and retain student engagement. In addition, a lecturer reported that the end of the lesson came abruptly. Therefore, additional interactive activities could also be used to act as a smoother closing for the lesson.

The following are a few possibilities for additional activities:

1. Interactive Discussion: Additional activities could be used to help address remaining misconceptions from the lesson. One option for this activity would be to have students ask questions anonymously, which could then lead to a follow-up conversation about some common themes from these questions. Students were also engaged in the discussions throughout the lesson, which lends well to including additional discussion sections at later points in the lesson. Some examples of additional discussion prompts include the following:
  - Do certain types of alcoholic drinks possess more risk than others? (goal: discuss the perception of “safer” alcohol types and how there actually is no difference)
  - Is this topic important for your peers to know about? Why or why not? If so, what are the best ways we can spread the information to your peers? (goal: get students to understand the relevancy of FASD to this age group)
  - What was the most surprising thing you learned from the lesson, if any? (goal: help students see the different misconceptions about FASD their peers may have)
2. Follow-Along Activity: An activity that allows students to follow along throughout the lesson may retain their engagement. An option for an interactive activity is to provide students with a premade sheet that they can fill in with important information from the lesson. This allows students to remain engaged and creates an item they can keep to reference later. One lecturer suggested creating a worksheet that could be filled in with the symptoms of FASD on a body.

### **5.3 PSHE Association Accreditation**

**We recommend that the National FASD consider submitting the RISK lesson for accreditation with the PSHE Association.** The PSHE Association offers a Quality Mark accreditation for lessons that “meet best practice principles for safe and effective PSHE education” (*Quality Mark*). The Quality Mark lasts for three years and can bolster the credibility of the material, as well as make the resource more visible to other lecturers. The cost will be at least £1,500 for a single application. The exact cost and amount of time it takes to get the accreditation is determined by the type and size of the lesson material being submitted (*Quality Mark*).

We determined that the lesson is eligible for initial assessment as it is a full lesson plan with resources for lecturers to use within key stage 5. The free of charge initial assessment determines whether or not the lesson is eligible to continue through the rest of the accreditation process. The questions on the eligibility form and a majority of the answers to those questions can be found in [Appendix L](#). National FASD would need to provide the answers to three questions on the eligibility form that we could not answer.

After the first round of assessments, National FASD will have a chance to make updates and changes to the lesson in accordance with the PSHE Subject Specialist' recommendations. They will also then get a quote for how much the accreditation will cost for this lesson specifically. Any outside research or evaluations done on this lesson could be requested by the PSHE Association at this stage.



## Chapter 6: Conclusion

This study demonstrated that National FASD's RISK film and accompanying lesson plan increased knowledge and awareness about prenatal alcohol exposure and FASD in a small set of young adults ages 16 - 18. This initial round of testing helped National FASD further spread awareness of prenatal alcohol exposure and FASD and the resulting initial feedback provided possible improvements to the lesson. This project also produced physical and digital material for young adults that National FASD can use to continue this age group's education on the subject.

This research has provided insight into use of the materials with health and social care students in Furthering Education colleges, but this is only a small portion of the total 16 - 18 year old population. The results indicated that even for students learning about health, many held misconceptions about prenatal alcohol exposure and FASD that were corrected by the lesson. To further spread this information and reach the young adults who would likely not learn about prenatal alcohol exposure and FASD before graduating, these materials should be tested with larger groups of 16-18 year old students in a broader range of FE programmes and beyond. Furthermore, this project only measured short-term knowledge gain. In the future, testing this material in a longer time-span would allow National FASD to see the long-term effectiveness of the lesson. As anyone may expose themselves to these risks on a daily basis, or see risks taken by friends and family, it is important that educational efforts continue until the general population of the UK can identify these risks and their consequences.

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## Appendix A: Student Pre and Post Assessments with Student Survey Preamble

This study is being conducted by university students from Worcester Polytechnic Institute (WPI) in collaboration with the National Organisation for Fetal Alcohol Spectrum Disorder (National FASD). The purpose of this study is to evaluate the effectiveness of lesson materials on the causes, risks, prevention, and resources for Prenatal Alcohol Exposure. The lesson plan focuses on what Prenatal Alcohol Exposure and Fetal Alcohol Spectrum Disorder (FASD) is and how to prevent it. This information will be used to improve the lesson plan and create supplementary materials with the long-term goal of implementing FASD education in the lesson materials for post-16 schools.

We ask that you complete an anonymous pre and post survey to provide us with the following data:

1. Your current knowledge of FASD
2. What you learned from the lessonYour opinion on applying this knowledge in your life (and the lives of those around you)
3. Your feedback on the lesson materials used
4. Your data will be used in a published research paper, but no data or quotations will be connected to you.

**Your participation in this research is voluntary.** Your refusal to participate will not result in any penalty to you or your marks. You may decide to stop participating at any time in the study or choose to skip any part of the surveys.

**By completing the survey,** you are agreeing to participate in this study by providing response data. **If you choose not to participate, leave this survey blank.**

Personal Code: \_\_\_\_\_

2 Digits of Your Birth Month and a Parent's First Name

This code will be used only to link the responses of your pre- and post- survey, we will not collect any personal data.

*(example: If you were born in July and your parent's name is Olivia,  
your code would be: 07Olivia)*

Lecturer: \_\_\_\_\_

Date: \_\_\_\_\_

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These questions check to see what you might already know about Fetal Alcohol Spectrum Disorder (FASD). If you do not know an answer, just tick unsure. There is no penalty if you do not know.

1. What is Fetal Alcohol Spectrum Disorder (FASD)?

2. What are the effects of FASD on people who have the disorder?
3. If a pregnant woman took heroin or drank alcohol, which of the following statements is true about the long-term harmfulness of these substances for a baby's development?
  - ☐ Taking heroin is more harmful than drinking alcohol.
  - ☐ Taking heroin is equally as harmful as drinking alcohol.
  - ☐ Taking heroin is less harmful than drinking alcohol.
  - ☐ Unsure
4. If a baby is affected by FASD, how long do the effects last?
  - ☐ Only through infancy
  - ☐ Up through teenage years
  - ☐ Until the brain is fully developed
  - ☐ Lifelong
  - ☐ Unsure

**True or False:** Please tick true, false, or unsure for each of the following statements.

5. Drinking spirits (vodka, whisky, etc.) while pregnant could affect a baby's health.  
True\_\_\_ False\_\_\_ Unsure\_\_\_
6. Drinking a pint of beer while pregnant has a lower chance of affecting a baby's health compared to a shot of a spirit.  
True\_\_\_ False\_\_\_ Unsure\_\_\_
7. There are months where drinking while pregnant will **NOT** affect a baby's development.  
True\_\_\_ False\_\_\_ Unsure\_\_\_
8. It is safe for a woman to have one alcoholic drink during pregnancy.  
True\_\_\_ False\_\_\_ Unsure\_\_\_
9. A pregnant woman should avoid alcohol even if she has already consumed it.  
True\_\_\_ False\_\_\_ Unsure\_\_\_
10. The majority of young adults in the UK know about the risks of FASD.  
True\_\_\_ False\_\_\_ Unsure\_\_\_
11. The rate of FASD is higher than the rate of autism in the UK which is about 1 in 100 or 1%.  
True\_\_\_ False\_\_\_ Unsure\_\_\_
12. FASD only affects one's facial and bodily features.  
True\_\_\_ False\_\_\_ Unsure\_\_\_
13. Women are the **ONLY** ones responsible for understanding the risks of drinking while pregnant.  
True\_\_\_ False\_\_\_ Unsure\_\_\_
14. FASD is only a concern if the pregnant woman binge drinks, or drinks with the intention of getting drunk.  
True\_\_\_ False\_\_\_ Unsure\_\_\_

**This is the last question of the pre-assessment. Please do not move to the next page until instructed to do so.**

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These questions check to see what you learned from the film and lesson. Some questions are the same as before and some are new, please answer to the best of your ability.

1. What is Fetal Alcohol Spectrum Disorder (FASD)
2. What are the effects of FASD on people who have the disorder?
3. If a pregnant woman took heroin or drank alcohol, which of the following statements is true about the long-term harmfulness of these substances for a baby's development?
  - ☐ Taking heroin is more harmful than drinking alcohol.
  - ☐ Taking heroin is equally as harmful as drinking alcohol.
  - ☐ Taking heroin is less harmful than drinking alcohol.
  - ☐ Unsure
4. If a baby is affected by FASD, how long do the effects last?
  - ☐ Only through infancy
  - ☐ Up through teenage years
  - ☐ Until the brain is fully developed
  - ☐ Lifelong
  - ☐ Unsure

**True or False:** Please tick true, false, or unsure for each of the following statements.

5. Drinking spirits (vodka, whisky, etc.) while pregnant could affect a baby's health.  
True\_\_\_ False\_\_\_ Unsure\_\_\_
6. Drinking a pint of beer while pregnant has a lower chance of affecting a baby's health compared to a shot of a spirit.  
True\_\_\_ False\_\_\_ Unsure\_\_\_
7. There are months where drinking while pregnant will **NOT** affect a baby's development.  
True\_\_\_ False\_\_\_ Unsure\_\_\_
8. It is safe for a woman to have one alcoholic drink during pregnancy.  
True\_\_\_ False\_\_\_ Unsure\_\_\_
9. A pregnant woman should avoid alcohol even if she has already consumed it.  
True\_\_\_ False\_\_\_ Unsure\_\_\_
10. The majority of young adults in the UK know about the risks of FASD.  
True\_\_\_ False\_\_\_ Unsure\_\_\_
11. The rate of FASD is higher than the rate of autism in the UK which is about 1 in 100 or 1%.  
True\_\_\_ False\_\_\_ Unsure\_\_\_
12. FASD only affects one's facial and bodily features.  
True\_\_\_ False\_\_\_ Unsure\_\_\_

13. Women are the **ONLY** ones responsible for understanding the risks of drinking while pregnant.

True\_\_\_ False\_\_\_ Unsure\_\_\_

14. FASD is only a concern if the pregnant woman binge drinks, or drinks with the intention of getting drunk.

True\_\_\_ False\_\_\_ Unsure\_\_\_

**Please rate your agreement with the following statements.**

- The lesson taught me something new about FASD.
  - ☐ Strongly Agree
  - ☐ Agree
  - ☐ Neither agree nor disagree
  - ☐ Disagree
  - ☐ Strongly Disagree
- This lesson has cleared up a misconception I had about FASD.
  - ☐ Strongly Agree
  - ☐ Agree
  - ☐ Neither agree nor disagree
  - ☐ Disagree
  - ☐ Strongly Disagree
- This film and lesson has caused me to think more about the risks of sexual activity and drinking.
  - ☐ Strongly Agree
  - ☐ Agree
  - ☐ Neither agree nor disagree
  - ☐ Disagree
  - ☐ Strongly Disagree
- The information in this lesson is relevant to people my age.
  - ☐ Strongly Agree
  - ☐ Agree
  - ☐ Neither agree nor disagree
  - ☐ Disagree
  - ☐ Strongly Disagree
- Please explain your answer to the previous question. Why or why not?
- If you see or know a friend engaging with the types of risks discussed in the lesson, how likely would you be to share your concern with them?
  - ☐ Very Unlikely
  - ☐ Somewhat Unlikely



- ☐ Neither likely nor unlikely
- ☐ Somewhat Likely
- ☐ Very Likely
- How likely are you to visit the National Organisation for FASD's website (or any of their other resources) in the future?
  - ☐ Very Unlikely
  - ☐ Somewhat Unlikely
  - ☐ Neither likely nor unlikely
  - ☐ Somewhat Likely
  - ☐ Very Likely
- What was the biggest thing you learned from this lesson?
- Name a misconception that you believe your peers may have about FASD.
- Are there any areas regarding FASD or Prenatal Alcohol Exposure that you would like to know more about/you think would be helpful for people your age to understand?

# Appendix B: Lecturer Consent Forms

## Written Consent Form

### Informed Consent Agreement

You are being asked to participate in a research study. Before you agree, however, you must be fully informed about the purpose of the study, the procedures to be followed, and any benefits or risks that you may experience as a result of your participation. This form presents information about the study so that you may make a fully informed decision regarding your participation.

This study is being conducted by university students from Worcester Polytechnic Institute (WPI), in collaboration with the National Organisation for Fetal Alcohol Spectrum Disorder (National FASD). The purpose of this study is to evaluate the effectiveness of National FASD curricula for Further Education students, on the causes, risks, prevention, and resources for prenatal alcohol exposure. The lesson plan focuses on what Fetal Alcohol Spectrum Disorder (FASD) is and prevention. This information will be used to improve the lesson plan and create supplementary materials with the long-term goal of implementing FASD education in the curricula for post-secondary school.

We are asking lecturers to devote one class period to implement the provided lesson (approximately 60-90 minutes) by distributing our pre-assessment (10 minutes), showing a short video (10 minutes), leading students through guided discussions (20 minutes) and presenting an educational PowerPoint (25 minutes), and distributing our post-assessment (15 minutes). We ask that you collect the student pre and post assessments and return them to us unless the student elected to not participate. We anticipate between 30-60 minutes of lesson preparation dependent on your familiarity with FASD. Additionally, we also ask that you participate in a 30 minute post-lesson interview to share your thoughts on the materials, lesson plan, and student responsiveness. Ultimately, we approximate devotion of 4 hours over 1 to 3 weeks to this study.

**Your information is confidential and your students are anonymous.** If quoted or cited in any publication, you will not be identified by name in the report, but rather by a pseudonym (ex. Lecturer 1). If your school is mentioned, you may elect to exclude the identity. During your interview, we ask that any discussion of student learning does not name specific students. Audio from the interview will be recorded and available only to the research team and WPI faculty advisors. Research results will be published on the WPI project website and shared with National FASD. Our final report with study findings will be shared with you.

**Your participation in this research is voluntary.** You are free to end your participation at any time or decline to answer any questions. Your refusal to participate will not result in any penalty to you.

**For information about the rights of research participants, contact:** the IRB Manager, Ruth McKeogh, at [irb@wpi.edu](mailto:irb@wpi.edu), or the Human Protection Administrator, Gabriel Johnson, at [gjohnson@wpi.edu](mailto:gjohnson@wpi.edu). **If you have further questions about this study, contact:** the research team at [gr-LonC25.FASD@wpi.edu](mailto:gr-LonC25.FASD@wpi.edu) or our WPI faculty advisors Rick Vaz at [vaz@wpi.edu](mailto:vaz@wpi.edu) and Chrys Demetry at [cdemetry@wpi.edu](mailto:cdemetry@wpi.edu).

**In signing below**, you acknowledge that you have been informed about and consent to be a participant in the study described above. You are entitled to retain a copy of this consent agreement.

---

Participant Signature

---

Date

---

Participant Name (Print)

## Verbal Consent Form

### Interview Verbal Consent Script

This study is being conducted by university students from Worcester Polytechnic Institute, in collaboration with the National Organisation for Fetal Alcohol Spectrum Disorder. The purpose of this study is to evaluate the effectiveness of a National FASD lesson for FE students, on the causes, risks, prevention, and resources for prenatal alcohol exposure. This information will be used to improve the lesson plan and create supplementary materials with the long-term goal of implementing FASD education in the curricula for post-16 students. We are asking that you participate in this 30 minute post-lesson interview to share your thoughts on the materials, lesson plan, and student responsiveness.

**Your information is confidential.** We will not identify which colleges and teachers have participated in the research. If quoted or cited in any publication, you will not be identified by name in the report, but rather by a pseudonym (ex. Teacher 1). During your interview, we ask that any discussion of student learning does not name specific students. Audio from the interview will be recorded and available only to the research team and WPI faculty advisors. The audio recording will be stored and disposed of in accordance with UK GDPR (2018). Research results will be published on the WPI project website and shared with National FASD. Our final report with study findings will be shared with you on request.

**Your participation in this research is voluntary.** You are free to end your participation at any time or decline to answer any questions. You are free to withdraw your consent to be included in the research anytime before the research publication.

[Teacher Name], **Do you consent to participating in this interview?**

## Appendix C: Student Study Information Sheet

**Who are the researchers?** University students from the United States– Kenneth Doan, Kaelie Newell, Katherine Tse, and Aidan Watkins– collaborating with the National Organisation for Fetal Alcohol Spectrum Disorder (National FASD).

**What is the research study?** Evaluating Educational Materials for FE College Students on the Risks of Prenatal Alcohol Exposure

**What is the study about?** The purpose of this study is to evaluate the effectiveness of curricula on the causes, risks, prevention, and resources for prenatal alcohol exposure. The lesson plan focuses on what Fetal Alcohol Spectrum Disorder (FASD) is and prevention. This information will be used to improve the lesson plan and create supplementary materials with the long-term goal of implementing FASD education in the curricula for post-secondary school.

**How will I be involved?** We ask that as part of the class period designated for this lesson, you complete an anonymous pre and post survey to provide us with data on your knowledge of FASD and what you learned, your opinion on applying this knowledge in your life (and the lives of those around you), and your feedback on the lesson materials used.

**Will my grade be affected if I choose to not participate?** There will be no effect on your grade if you choose not to participate in the surveys.

**How will I benefit from participation?** Your benefit is education on FASD and potential improvement of the lesson for the next students.

**For information about the rights of research participants, contact:** the IRB Manager, Ruth McKeogh, at [irb@wpi.edu](mailto:irb@wpi.edu), or the Human Protection Administrator, Gabriel Johnson, at [gjohnson@wpi.edu](mailto:gjohnson@wpi.edu). **If you have further questions about this study, contact:** the research team at [gr-LonC25.FASD@wpi.edu](mailto:gr-LonC25.FASD@wpi.edu) or our WPI faculty advisors Rick Vaz at [vaz@wpi.edu](mailto:vaz@wpi.edu) and Chrys Demetry at [cdemetry@wpi.edu](mailto:cdemetry@wpi.edu).

**Your participation in this research is voluntary.** Your refusal to participate will not result in any penalty to you or your grade. You may decide to stop participating at any time in the study or choose to skip part(s) of the surveys.

**By completing the survey, you are agreeing to participate in this study by providing response data. If you choose not to participate, leave the survey blank.**

# Appendix D: Lecturer Emails

## Lesson Introduction Email

Dear [Name],

Hello, we are a team of university students from Worcester Polytechnic Institute who are working in collaboration with the National Organisation for FASD to test the effectiveness of their post-secondary lesson on Fetal Alcohol Spectrum Disorder. Joanna Buckard provided your contact and indicated you would be willing to participate in our study by piloting the lesson. Thank you for your interest!

The lesson materials - the RISK short film, an educational PowerPoint, and a learning activity guide (lesson plan) - were created by National FASD and are available at <https://preventfasd.info/risk/>. We are hoping that you will be able to:

- Meet with us online for about 30 minutes during the week of January 20th to discuss the lesson and assessment plan
- In one or more of your courses, implement the lesson and pre- and post- assessments in a 90 minute lesson period during the weeks of January 27th or February 3rd
- Meet with us again after the lesson has been implemented for a 30 minute follow-up interview

By our current estimate, with consideration for the lesson preparation and the post-interview, this would take approximately four hours of time over two or three weeks if the lesson was piloted in a single 90 minute class period.

We would like to schedule the initial meeting with you to discuss the materials, lesson implementation, and any questions you may have. We can meet any time between Tuesday 21 Jan and Friday 24 Jan between 9am - 6pm. Could you please reply with a day and time that would be convenient for you?

If you have any additional questions, please do not hesitate to contact us at [gr-lonc25.fasd@wpi.edu](mailto:gr-lonc25.fasd@wpi.edu) or our advisors at [cdemetry@wpi.edu](mailto:cdemetry@wpi.edu) or [vaz@wpi.edu](mailto:vaz@wpi.edu). Additionally, if you know any other lecturers who may be interested in participating, could you please provide their contact information? Thank you once again for your participation and we look forward to working with you on this important initiative.

Best,  
Katherine Tse  
Kenneth Doan  
Kaelie Newell  
Aidan Watkins

## Lesson Recruitment Emails

Note: This email was sent to our sponsors to use to recruit lecturers in London FE colleges

Hello,

The National Organisation for FASD is working in collaboration with a group of university students to test the effectiveness of our post-secondary school lesson on Fetal Alcohol Spectrum Disorder. On behalf of the research team, we are reaching out to local health and social care vocational programs to find lecturers who may be interested in volunteering to pilot the lesson in late January or early February.

The lesson consists of a 10 minute short film and an educational powerpoint with guided classroom discussions throughout. The materials and guide can be found at <https://preventfasd.info/risk/>. The students have created additional pre and post surveys for students to measure the effectiveness of the lesson. They also ask that lecturers participate in an interview after piloting the lesson so they can hear the educator's perspective.

Participation in the study is estimated to take approximately 4 hours of devoted time over 1 or 2 weeks, if implemented in one lesson period of 1.5 hours. Please reach out to [gr-lonc25.fasd@wpi.edu](mailto:gr-lonc25.fasd@wpi.edu) if you are interested or for any additional information.

---

Note: This email was sent from the team to recruit lecturers in London FE colleges

Subject: Request to Connect about Piloting a Lesson on Fetal Alcohol Spectrum Disorder

Hello,

We are a group of students working in collaboration with the National Organisation for FASD to test the effectiveness of their post-secondary school lesson on Fetal Alcohol Spectrum Disorder. We are reaching out to local health and social care vocational programs to find lecturers who may be interested in volunteering to pilot the lesson in late January or early February.

The lesson consists of a 10 minute short film and an educational PowerPoint with guided classroom discussions throughout. The materials and guide can be found at <https://preventfasd.info/risk/>. We have created additional pre and post surveys for students to measure the effectiveness of the lesson. We also ask that lecturers participate in an interview after piloting the lesson so we can hear the educator's perspective.

Participation in the study is estimated to take approximately 4 hours of devoted time over 1 or 2 weeks, if implemented in one lesson period of 1.5 hours. Please reach out to [gr-lonc25.fasd@wpi.edu](mailto:gr-lonc25.fasd@wpi.edu) if you are interested or for any additional information.

Best Regards,  
Kaelie Newell

## Appendix E: College Outreach Call Script

Hi, I'm a student working with the National Organisation for Fetal Alcohol Spectrum Disorder on a research project regarding implementing a new lesson plan on prenatal alcohol exposure. Would it be possible to contact someone who lectures in Health and Social Care who may be interested?

-----  
We are reaching out to local health and social care vocational programmes to find lecturers who may be interested in volunteering to pilot the lesson in late January or early February.

The lesson consists of a 10 minute short film and an educational powerpoint with guided classroom discussions throughout. In addition to the materials created by the National Organisation of FASD, we have created additional pre and post surveys for students to measure the effectiveness of the lesson. We are also asking that lecturers participate in an interview after piloting the lesson so they can hear the educator's perspective.

Participation in the study is estimated to take approximately 4 hours of devoted time over 1 or 2 weeks, if implemented in one lesson period of 1.5 hours. Please reach out to [gr-lonc25.fasd@wpi.edu](mailto:gr-lonc25.fasd@wpi.edu) if you are interested or for any additional information.



# Appendix F: Lesson Instruction Sheet

## How to Implement the Assessments

We ask that the pre-assessment and post-assessment be given as part of the lesson. This document will go over how to introduce the project and assessments as a whole and how to explain the necessary consent we need for data collection from the pre-assessment and post-assessment.

### A Quick Note

In order for us to use any data from the assessments, we need consent from each eligible student. We are automatically excluding any data from **students who do not wish to participate**.

## Introducing the Research Project

When introducing the lesson, it is required that you also introduce the research project. We have included an example paragraph below that can be read to students. Feel free to adjust it as you see fit, but the content should remain the same. You are also expected to give out the Student Information Sheet provided to you which has a more in-depth version of your announcement.

### Example Announcement

“Today’s lesson is currently being assessed as part of a research project. The project’s goal is to assess the effectiveness of the teaching materials. The researchers are looking to make improvements to the lesson based on the data they collect. There will be brief online surveys before and after the lesson. Participating in these surveys is completely voluntary. Whether or not you participate will not affect your marks in this course. If you choose to participate, you will be anonymous. The data from this research will be published in a final report, but once again, any identifying information will not be attached to the data, any quotes, or any results. At the start of the surveys, there will be a short description of the project similar to the information sheet and what I am telling you now. Filling out the survey will indicate your willingness to participate in the research. If you do not wish to participate, you can simply submit a blank survey. Any questions?”

## Pre-Assessment and Post-Assessment

The pre-assessment is set to take place before the viewing and discussion of the Risk film. It is the first part of the online survey/paper assessment. Please ensure the following is shared with the students.

<ul style="list-style-type: none"><li>- <u>Digital Assessments</u>: The two assessments are attached as one survey. There is a nat the end of the pre-assessment warning you that you will not be able to go back. There is also a password to get into the post-assessment which will be shared at the end of the lesson. (You can find the password below this box)</li><li>- <u>Paper Assessments</u>: The two assessments are attached as one survey. There is a break in the survey where we will pause and finish the rest of the lesson. Please do not go past the end/break page of the pre-survey until we finish the lesson.</li></ul>
<ul style="list-style-type: none"><li>- There is a small paragraph briefly going over what I told you earlier about the research. Everyone should read the paragraph. Participation is not required. It is totally up to you.</li></ul>
<ul style="list-style-type: none"><li>- Just as a reminder, any answers shared will be anonymous and your personal information will not be shared or published anywhere in association with this.</li></ul>
<ul style="list-style-type: none"><li>- A code system may be used to connect <u>paper</u> pre and post surveys. The code will be a combination of the <u>2 Digits of Your Birth Month</u> followed by a <u>Parent's First Name</u>.</li></ul>
<ul style="list-style-type: none"><li>- Are there any questions?</li></ul>

For Digital Assessments: Once the lesson is complete, you can share the password for the post-assessment to the students. The password is **National FASD**. It is not case sensitive but a space is needed between National and FASD.

## Returning the Data

If there is internet/technology access, students should all fill out the digital survey. The software allows us to access it without any extra steps from you. You will be sent all of the survey results if you want and do not already have access to them. If you need to use paper copies, we ask that you scan and send the documents to us. In special cases, we can work with you to find an alternative way to retrieve the data.

## Appendix G: Lecturer Questions

Initial Lecturer Demographic Questions	
Topic/Information	Question Asked
Teaching Focus	What subject or subjects do you teach? Have you taught about FASD in this class before?
Projected Class for Implementation (name, topic, size)	What course do you think you will implement this lesson in? What is the topic of this class or unit of the course? What is the level of this class (introductory vs advanced)? What is the estimated size of the class? Does your class have access to technology to take the survey digitally? What is the age range of your class?/Do you have any students under 16? What is the sex distribution in your class?
Snowball Sampling	Do you have any colleagues that might be interested in participating in this study?

Lecturer Interview Guide
<p>The following interview is to be followed loosely in flow and questions, according to the guidelines of a semi-structured format.</p> <ol style="list-style-type: none"> <li>1. Introductions</li> <li>2. In your time teaching, have you ever taught or seen FASD educational materials used in an FE classroom?             <ol style="list-style-type: none"> <li>a. If so, what were they? How often has this type of material come up?</li> </ol> </li> <li>3. Lesson Implementation Questions             <ol style="list-style-type: none"> <li>a. Did you follow the 60-minute or 90-minute version of the lesson plan?</li> <li>b. Were you able to show the RISK film?</li> <li>c. Did you stop for all discussion prompts?</li> <li>d. Did you show all of the powerpoint slides?</li> </ol> </li> <li>4. Were there any portions of the lesson that were confusing?             <ol style="list-style-type: none"> <li>a. Did you make any changes accordingly?</li> </ol> </li> </ol>

5. How was the overall engagement of students during the lesson?
  - a. Were the students active participants in discussion?
    - i. What percentage of the class would you estimate?
  - b. Was there anything that stood out to you for student reaction, perhaps questions or comments you recall?
    - i. During the video?
    - ii. In the discussions?
    - iii. During the powerpoint presentation?
6. How was implementing the lesson plan?
  - a. How much did the structure facilitate classroom discussion?
7. Any suggestions for how to improve the lesson plan?
  - a. How likely would you be to implement this lesson again?
  - b. Would specific FE programmes or curricula benefit from this lesson?
  - c. In your opinion, what was the most effective portion of the lesson? What was the least effective?
  - d. Do you think any supplemental information or materials would be beneficial?
    - i. What kind of materials?

## Appendix H: Student Assessment Rubrics and Codes

### Open-Ended Response Rubric

Question	High	Medium	Low
What is FASD?	The response identifies FASD is caused by a pregnant woman consuming any amount of alcohol and affects specifically the foetus or child, as well as includes additional correct information.	The response identifies the cause of FASD as a pregnant woman consuming alcohol and does not contain any further incorrect information.	The response is mostly incorrect, not completed, or lacks more information than the provided context of alcohol.
What are the effects?	The response is correct and contains three or more of the following criteria: lifelong or incurable disorder; affects the whole body; neurological, cognitive, or brain differences; physical differences; and social difficulties.	The response is correct and contains two of the following criteria: lifelong or incurable disorder; affects the whole body; neurological, cognitive, or brain differences; physical differences; and social difficulties.	The response is not completed, incorrect, or contains none or one of the following criteria: lifelong or incurable disorder; affects the whole body; neurological, cognitive, or brain differences; physical differences; and social difficulties.

## Student Assessment Knowledge Scoresheet

Question (Summarised)		Score	Total Points
What is FASD?	High (2), Medium (1), Low (0)		2
What are the effects?	High (2), Medium (1), Low (0)		2
Heroin or alcohol?	Taking heroin is less harmful (1 point)		1
Length of effects?	Lifelong (1 point)		1
<b>True or False:</b>			
Drinking spirits	True (1 point)		1
Drinking a pint	False (1 point)		1
Months where drinking pregnant	False (1 point)		1
Safe for one drink	False (1 point)		1
Avoid alcohol	True (1 point)		1
Majority of young adults	False (1 point)		1
Rate of FASD	True (1 point)		1
Only facial features	False (1 point)		1
Women are only responsible	False (1 point)		1
Binge drinking	False (1 point)		1
<b>Total</b>			<b>16</b>

## Feedback Coding

Code	Description
Y_	Addendum that indicates the action/topic is occurring/positive
N_	Addendum that indicates the action/topic is NOT occurring/negative
*_	Addendum that indicates there is more information / elaboration
D	Mentions drinking
S	Mentions sex or pregnancy
PK	Mentions previous knowledge/awareness of topic
OD	Mentions one drink (Y = one matters, N = one doesn't matter)
CAR	Mentions caring about the risks
H	Mentions the risk of alcohol compared to heroin
FC	Mentions the commonality of FASD
BD	Mentions binge drinking
SYM	Mentions symptoms (P = physical, C = cognitive/neurological)
T	Mentions trimesters/times in pregnancy
CUR	Mentions curable
TRE	Mentions treatable
L	Mentions length of lesson
CNT	Mentions content
RISK	Mentions RISK Film

# Appendix I: Student Assessment Data

## Accessing Raw Data

The data file can be accessed at [Digital WPI](#). Search using an author name, Kaelie Newell. Student responses 10, 11, and 22 were excluded in analysis due to incomplete entries, as the overarching goal was to measure change in knowledge.

## Student Responses to Multiple-Choice Knowledge Questions

Number of Responses: 38

Note: Correct answers are emphasised in light red text.

Assessment Questions and Response Options	Pre-Responses	Post-Responses
If a pregnant woman took heroin or drank alcohol, which of the following statements is true about the long-term harmfulness of these substances for a baby's development?		
Taking heroin is more harmful than drinking alcohol.	10 (26.3%)	1 (2.6%)
Taking heroin is equally as harmful as drinking alcohol.	20 (52.6%)	11 (29%)
<b>Taking heroin is less harmful than drinking alcohol.</b>	1 (2.6%)	20 (52.6%)
Unsure.	7 (18.4%)	6 (15.8%)
If a baby is affected by FASD, how long do the effects last?		
Only through infancy	1 (2.6%)	0 (0%)
Up through teenage years	0 (0%)	1 (2.6%)
Until the brain is fully developed	3 (7.9%)	2 (5.3%)
<b>Lifelong</b>	27 (71.1%)	35 (92.1%)
Unsure	7 (18.4%)	0 (0%)
True or False: Drinking spirits (vodka, whisky, etc.) while pregnant could affect a baby's health.		
<b>True</b>	38 (100%)	38 (100%)
False	0 (0%)	0 (0%)
Unsure	0 (0%)	0 (0%)



Assessment Questions and Response Options	Pre-Responses	Post-Responses
True or False: Drinking a pint of beer while pregnant has a lower chance of affecting a baby's health compared to a shot of a spirit.		
True	14 (36.8%)	9 (23.7%)
False	15 (39.5%)	22 (57.9%)
Unsure	9 (23.7%)	7 (18.4%)
True or False: There are months while drinking while pregnant will NOT affect a baby's development.		
True	4 (10.5%)	2 (5.3%)
False	25 (65.8%)	34 (89.5%)
Unsure	9 (23.7%)	2 (5.3%)
True or False: It is safe for a woman to have one alcoholic drink during pregnancy.		
True	16 (42.1%)	3 (7.9%)
False	15 (39.5%)	35 (92.1%)
Unsure	7 (18.4%)	0 (0%)
True or False: A pregnant woman should avoid alcohol even if she has already consumed it.		
True	35 (92.1%)	37 (97.4%)
False	1 (2.6%)	1 (2.6%)
Unsure	2 (5.3%)	0 (0%)
True or False: The majority of young adults in the UK know about the risks of FASD.		
True	3 (7.9%)	3 (7.9%)
False	26 (68.4%)	31 (81.6%)
Unsure	9 (23.7%)	4 (10.5%)

Assessment Questions and Response Options	Pre-Responses	Post-Responses
True or False: The rate of FASD is higher than the rate of autism in the UK, which is about 1 in 100 or 1%.		
True	14 (36.8%)	28 (73.7%)
False	8 (21.1%)	6 (15.8%)
Unsure	16 (42.1%)	4 (10.5%)
True or False: FASD only affects one's facial and bodily features.		
True	3 (7.9%)	0 (0%)
False	28 (73.7%)	37 (97.4%)
Unsure	7 (18.4%)	1 (2.6%)
True or False: Women are the ONLY ones responsible for understanding the risks of drinking while pregnant.		
True	2 (5.3%)	1 (2.6%)
False	28 (73.7%)	35 (92.1%)
Unsure	8 (21.1%)	2 (5.3%)
True or False: FASD is only a concern if the pregnant woman binge drinks, or drinks with the intention of getting drunk.		
True	8 (21.1%)	4 (10.5%)
False	20 (52.6%)	31 (81.6%)
Unsure	10 (26.3%)	3 (7.9%)

# Appendix J: Lecturer Interview Summaries

## Lecturer 1 Summary

### Lecturer Context:

- Has not taught FASD to this class, but has seen materials from National FASD
- Health and Social Care

### Lesson Implementation:

- 90 minute lesson with 11 minute video
- Stopped at all discussion points
- Presented all slides in the PowerPoint
- Had a short preparation time but felt the lesson was easily implemented

### Lesson Feedback:

- Felt the ending was abrupt, added her own filler to summarise and get students to reflect on applications for FASD in their lives
- Thought the lesson was great overall
- The conversation of alcohol versus heroin was very powerful
- Really enjoyed the outline of the body and symptoms / physiology content (could have been due to previous unit on fetal development)
- Liked the idea of having a pre- and post- assessment so students could realise what they have learned
- Would use this lesson again in the future
- Could also apply this content easily to child development
- Could be useful for all students, felt this was appropriate for the age range, but does show some concern that lecturers in alternate topics may be uncomfortable presenting
- Film and discussions were effective

### Lesson Improvement / Additional Resources:

- Lesson Plan: there was a lot of text, would have preferred a list to a wall of text
- The inclusion of an outline of the body as a handout would be nice to allow students to follow along and participate

### Student Opinions / Student Engagement:

- Overall engagement was an 8, some individuals were 10/10
- Towards the end, students with ADHD had trouble staying engaged
- One male student was very passionate about the subject of men supporting their spouses, believing that they should not drink as well - responsibility starts at conception
- Students were very interested in the RISK film and surrounding discussions on the risks of fighting and drinking

## **Lecturer 2 Summary**

### Lecturer Context:

- Has taught topic before in general and to this class (general lesson made for the class B-tech health & social care level 3, taught to each class as a refresher)
- Class is level 3
- Thought it was nice to bring the topic / discussion back again

### Lesson Implementation:

- 60-minute version of the lesson and longer risk video
- Cut only the slides recommended in the lesson guide
- Stopped at all discussion points

### Lesson Feedback:

- Didn't find anything in particular confusing
- RISK Video
  - Felt the beginning parts of the video was too long / unnecessary, least effective part of lesson
  - [Students] liked the video, thought the reveal and quality were good
  - Last section (longer section) was the most impactful for them
- Symptoms Video
  - Went too fast to teach to, making it difficult to give students the info
- Implementation and Lecturer Guide was clear, anyone without much knowledge could do it
- Really liked the warnings about sensitive topics at the end, feels as though those are only usable if you know the audience in advance
- Discussion was the most effective part of the lesson
  - "Is it worth it? One drink? One round?" - really good analogy
- Professional lesson
- Liked it and would steal lesson components for next year
- Believes the lesson could be useful to multiple groups - early years, healthcare, access

### Lesson Improvement / Additional Resources:

- Students like seeing lived experience, would likely engage more if that was available (ex. case study)
- Believes it is important to know audience ahead of time
- Digital resource
- Fact sheet, PDF, readable but eye-catching resource (ex. autism rate)

### Student Opinions / Student Engagement:

- Students were engaged in all discussions EXCEPT the 'road' discussion, which feels like it is not related enough
- Students were more engaged when speaking about the fighter
- "Anything person-related, [students] are immediately more engaged"
- Usual discussion pattern, except one student that stuck out as speaking much more than usual on the topic
- Nothing stood out because the class has already covered the topic

### **Lecturer 3 Summary**

#### Lecturer Context:

- Has not taught topic before at all
- Class is level 3

#### Lesson Implementation:

- 60-minute version of the lesson
  - Due to time constraints
- Shorter RISK video
  - Due to time constraints
- Stopped at all discussion points

#### Lesson Feedback:

- RISK film stood out to students
  - Reveal about pregnancy at end
  - Most effective portion, liked the shock factor
- Liked daily risk analogy
- Liked stat comparing heroin/drugs to alcohol
- Implementation went really well
- Rated likeliness to reimplement a 10/10
- Could be implemented in health and social care, childcare courses
- End of PowerPoint was "information overload"
- Appreciated content warnings due to sensitive nature of topic

#### Lesson Improvement / Additional Resources:

- Could include stats about FASD comparing globally to UK
- Could include a mini activity to break up the monotony

#### Student Opinions / Student Engagement:

- Rated engagement at around a 7 (out of 10), attributed it to it being first thing in the morning, students were "groggy"
- Majority did engage well

# Appendix K: Supplemental Brochure and Leaflet

## Trifold Brochure

([Link to Trifold Brochure](#))

### Common Misconceptions

**Myth:** FASD only occurs when the mother is a heavy drinker.

**Truth:** FASD can occur from any level of alcohol consumption during pregnancy.

**Myth:** Symptoms of FASD are purely physical.

**Truth:** Most people with FASD have no physical signs and only cognitive symptoms.

**Myth:** It's safe to drink at the start of the pregnancy.

**Truth:** There isn't a time where it's safe to drink during pregnancy.

**Myth:** A little wine is safe during pregnancy.

**Truth:** No amount of alcohol during pregnancy is safe.

**Myth:** FASD is a curable disorder.

**Truth:** FASD is manageable, but is still a lifelong condition.

### Resources

Want to learn more about the National Organisation for FASD?

Do you think you might have FASD or know someone with FASD?

Check out more on having a healthy lifestyle in pregnancy!

### Drinking, Sex, and You

An Introduction to the Cause, Symptoms, and Prevention of Fetal Alcohol Spectrum Disorder (FASD).

NATIONAL ORGANISATION FOR FASD

WPI

### Alcohol and Pregnancy

Alcohol use during pregnancy can increase the risk of miscarriage, premature birth, still birth, and Fetal Alcohol Spectrum Disorder.

There are 428 conditions associated with prenatal alcohol exposure.

Avoiding alcohol while pregnant is the only 100% effective way to avoid FASD.

More about Alcohol in Pregnancy

I drank while pregnant. What do I do?

### What is FASD?

Fetal Alcohol Spectrum Disorder (FASD) is the result of an alcohol-exposed pregnancy.

FASD is a **full-body** diagnosis that can include more than **400** known conditions.

These symptoms are primarily neurodevelopmental conditions with lifelong **cognitive, emotional, and behavioural** challenges.

### Life with FASD

FASD is more common than people think.

About **2-4%** of people in the UK have FASD vs About **1%** of people in the UK have Autism

Baillie, a young adult with FASD, has won 28 sports medals and trophies in her time at school. Here is what she thinks about having FASD.

"If I had to explain what it was like living with FASD the word would be painful and because it's with you for life and it is with you forever."

"But apart from that FASD makes me special."

"Just because we have a disability or not doesn't mean we can't do or achieve anything"

## Digital Leaflet

([Link to Digital Leaflet](#))

# Drinking, Sex, and You

An Introduction to the Cause,  
Symptoms, and Prevention of  
Fetal Alcohol Spectrum Disorder  
(FASD).



## Common Misconceptions

**Myth:** FASD only occurs when the mother is a heavy drinker.

**Truth:** FASD can occur from any level of alcohol consumption during pregnancy.

**Myth:** Symptoms of FASD are purely physical.

**Truth:** Most people with FASD have no physical signs and only cognitive symptoms.

**Myth:** It's safe to drink at the start of the pregnancy.

**Truth:** There isn't a time where it's safe to drink during pregnancy.

**Myth:** A little wine is safe during pregnancy.

**Truth:** No amount of alcohol during pregnancy is safe.

**Myth:** FASD is a curable disorder.

**Truth:** FASD is manageable, but is still a lifelong condition.

## Alcohol and Pregnancy

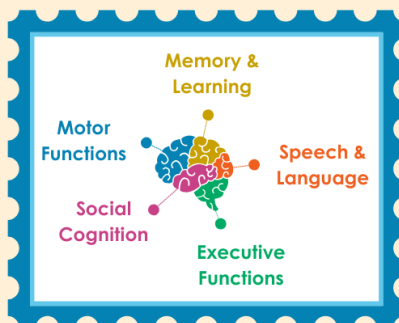
Alcohol use during pregnancy can increase the risk of miscarriage, premature birth, still birth, and Fetal Alcohol Spectrum Disorder.

There are 428 conditions associated with prenatal alcohol exposure.

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"If I had to explain what it was like living with FASD the word would be painful and because it's with you for life and it is with you forever."

"But apart from that FASD makes me special."

"Just because we have a disability or not doesn't mean we can't do or achieve anything"



# Resources



Check Out These Links to Learn More!



Want to learn more about the National Organisation for FASD?



More about Alcohol in Pregnancy



Do you think you might have FASD? Do know someone with FASD?



I drank while pregnant. What do I do?



Check out more on having a healthy lifestyle in pregnancy!





## Appendix L: PSHE Association Quality Mark Eligibility Questions

Question	Recommended Answer
First Name	[First name of submitter]
Last Name	[Last name of submitter]
Organisation Name	National Organisation for FASD
Status of Organisation	Registered Charity
Phone Number	[Phone number of submitter]
Email	[Email of submitter]
Is it an educational resource with lesson plans designed to be used in PSHE education lessons?	Check Yes
Is it designed to be used by teachers and schools?	Check Yes
Can you confirm that the resource includes PSHE education lesson plans?	Check Yes
Is it designed for us within key stages 1 to 5?	Check Yes
Can you confirm that the materials are not a whole programme, or part of a whole programme?	Check Yes
Can you confirm that teachers are not required to attend any form of training in order to deliver the materials?	Check Yes
Name of Resource	Exploring the RISKS
Approximate lesson length and total number of lessons	There is a 60-minute and a 90-minute version of this lesson.
Resource format(s) [Select all that apply.]	Check “PDF” and “PowerPoint”
Key Stage [Select all that apply.]	Check “KS 5”
Will the resource be hosted, or made	Check Yes

accessible online?	
Does the resource contain/draw on any video content, online games, or similar?	Check Yes
Please outline the different topics and themes that your resource links to, either in the Department for Education statutory guidance for Relationships Education, Relationships and Sex Education and Health Education, or the PSHE Association Programme of Study.	<p>Core Themes of the Lesson: Health &amp; Wellbeing, Relationships, Learning Opportunities in Living in the Wider World</p> <p>PSHE Association Programme of Study RKS 5 Learning Outcome Codes relevant to lesson: H20, H21, H22, R14, R18</p>
Is your resource free for any teacher or school to use?	Check Yes
Who or which organisation has funded the materials?	
What is the evidence base/your theory of change underpinning your approach?	
Is your resource complete or still in production? What stage will it be at when it is first submitted for assessment?	The resource is completed and has gone through one round of effectiveness research in FE Colleges run by a group of University students from the United States. Their report can be shared on request.
Brief resource description	