

PDF forms are not compatible with the Google Chrome PDF viewer plug-in. Chrome users should save the form, then reopen and complete with Adobe reader.

EE/RPF

For use from May/November 2027

Page 1 / 2



International Baccalaureate®
Baccalauréat International
Bachillerato Internacional

Student personal code:

Extended essay - Reflection and progress form

Student: This form is to be completed by you and your supervisor during the progress and completion of the extended essay. It records your progress through the extended essay process and includes your reflective statement addressing your extended essay experience. You must undertake three formal reflection sessions with your supervisor: The first formal reflection session should focus on your initial ideas and how you plan to undertake your research; the interim reflection session takes place once a significant amount of your research has been completed, and the final session will be in the form of a viva voce, once you have completed and handed in your extended essay. This document acts as a record in supporting the authenticity of your work. Following the viva voce, you write a **reflective statement** of no more than 500 words., which must be included on the RPF.

The completion of this form is a mandatory requirement of the extended essay. It must be submitted together with the completed essay. The reflective statement will then be assessed under Criterion E. Students and supervisors should be aware that a mark of 0 will be awarded by the examiner for criterion E if the RPF is blank or the reflective statement is written in a language other than that of the accompanying essay.

Supervisor: You must have three reflection sessions with each student, one early in the process, an interim meeting and then the final viva voce. Other check-in sessions are permitted but do not need to be recorded on this sheet. After each reflection session you must record the month that the reflection session took place, the student's year of DP study at that time and initial the form.

By submitting this student work for assessment, you are taking responsibility for its authenticity. No piece of student work should be uploaded/submitted to the e-Coursework system if its authenticity is in doubt.

First reflection session

Month: DP year (1 or 2): Supervisor initials:

Interim reflection session

Month: DP year (1 or 2): Supervisor initials:

Final reflection session – Viva voce

Month: DP year (1 or 2): Supervisor initials:



EE/RPF

Page 2 / 2



Reflective statement

(No more than 500 words, written in the same language as the accompanying extended essay)

As a responsible consumer, I avoid wasting food. However, there are some foods, such as citrus, which inevitably lead to a huge waste of peel. I decided to work on the β -carotene extraction from orange peels due to my concern of the millions of tons of orange peels that are generated annually in different industries.

While my first approach to the topic was to perform a “green chemistry” experiment, issues dealing with availability of equipment led me to work with the yield of β -carotene at different temperatures using a reflux setup, filtration, spectrophotometer and distillation.

The different findings regarding the response to heat of β -carotene helped me to determine and narrow both the independent and the dependent variables: I chose temperature as IV and concentration. Determining reflux time was also challenging, research papers show retention time of up to 72 hours, but the concentration of the product and the high concentrations obtained made me bring reflux time to 10 minutes.

The main challenge I found while performing the experiment was that the mixture of orange peel and ethanol was not always transparent, mainly at temperatures above 60°C —probably due to unwanted degradation products that are insoluble in ethanol. Further investigation taught me that the higher the air exposure time, the blurrier the mixture, so I had to keep the time between the end of reflux and the spectrophotometer analysis as constant as possible to avoid procedure bias.

All in all, this extended essay helped me mainly to develop my laboratory skills. My first experiments were chaotic and my progress slow. Eventually, I gained confidence and started to work faster and in an organized fashion. Familiarization with the experimental procedure allowed me to work with several samples at the same time, and to deal with different stages simultaneously. When working on the methodology, I polished my problem-solving skills (mainly when having to determine an optimal retention time). I became resilient while learning about the degradation of β -carotene, as there are not many papers on this subject. All these skills will undoubtedly help me in my future career as an experimental medicine doctor.

