

Cambridge English for
Scientists

ADDITIONAL ACTIVITIES

UNIT 1**A project summary**

- 1 a** A team of researchers have written a project summary for a grant proposal to the National Science Foundation of the United States. Ignoring the words in bold, read the first sentence of each of the five paragraphs from the project summary (a–e). Then in pairs, say what you think the best order is:

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

- a Both teams for this project already have knowledge in various **features** of the problems described.
- b However there are very few **outcomes** and the **methods** that were developed **have broken down**.
- c The need for mathematical analysis of shell models is in response to a variety of technological demands, which **call for** more complex models.
- d This project will focus on stabilization and optimal control, particularly with boundary controls, of systems concerning dynamical shells.
- e We propose to **carry out** collaborative research between the French National Institute of Computer Science Research and the University of Ottawa in the general area of control theory for models **illustrated by** partial differential equations (PDEs).

- b** Ignoring the words in bold, check your answers to Exercise 1a by matching a sentence (a–e) to the correct paragraph (1–5) of the full project summary.

NSF Grant Proposal for Stabilization and Optimal Control of Dynamic Shell Models

[1] _____. We intend to investigate problems related to stabilisation and optimal control of dynamic shell models where control actions and sensing are put into place via smart materials technology.

[2] _____. The principle model considered in this proposal is a three-dimensional structural acoustic interaction with curved walls, which is modeled by shell equations. This model occurs in the context of decreasing noise or pressure entering an acoustic chamber (e.g. airplane's cabin) and generated by an exterior source.

[3] _____. Thus mathematical investigation related to control problems of shell equations is challenging from a mathematical point of view and calls for the introduction of new tools and new techniques for the analysis and computations connected to the problem.

[4] _____. Two approaches will be considered. First, piezoelectric shell's modeling tracked by past researchers and a second centre on piezoelectric patches attached to the curved wall. These approaches will result in two different control models. Rigorous mathematical analysis of the problem, including comparative analysis, followed by numerical computations and experimental verification of the models will represent the essential part of the project.

[5] _____. Thus we wish to combine the teams' expertise to generate results leading to progress in the field.

C Read the completed project summary. Then in pairs, decide if the following statements are true (T) or false (F).

- 1 The summary includes information on what research will be done and who will do it.
- 2 The summary does not mention any possible commercial applications of the research.
- 3 Members of the team have worked on projects in similar areas in the past.

2 a The table below includes useful verbs and nouns you can use in your own project summary. Match a word in bold from the texts in Exercises 1a and b to a word with a similar meaning in the left-hand columns of the tables.

Verbs	
describe	
fail	
focus on	
implement	
lead to	result in (<i>will result in</i>)
plan to	
produce	generate
require	

Nouns	
answer	response
aspect	
research	investigation
result	
technique	

b The adjectives in the first column are taken from the project summary. Complete the second and third columns in the table below as in the example.

Adjective	Noun(s)	Verb
collaborative	collaboration collaborator	collaborate
comparative		
complex		
different		
various		