

ACER Portfolio Project

TEACHING FIELD: Secondary Science
LEVEL: Highly Accomplished

ENTRY 4: Engaging your professional community in an initiative to improve teaching and learning in science

The ACER Portfolio Project focuses on the research and practical challenges involved in developing valid and feasible methods by which teachers can demonstrate how they meet the Australian Professional Standards for Teachers at the highly accomplished level. Entry 1 is one of four portfolio entries for secondary science teachers.

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ENTRY 4: Engaging your professional community in an initiative to improve teaching and learning in science

Introduction

Highly accomplished teachers of science are knowledgeable and skilled classroom practitioners who work collaboratively with colleagues to provide quality opportunities for their students to learn science. They engage colleagues in professional discussions and activities that promote professional development and improved practice.

Highly accomplished teachers of science have a deep knowledge and understanding of their students and factors that may be affecting student attitudes toward, or progress in, learning science. They are good at monitoring student attitudes to, and engagement in, learning science. They play a significant role in using that knowledge about students to identify areas where professional knowledge and practice may need to improve, and in developing activities and projects to meet those needs.

Highly accomplished teachers of science align professional standards, curriculum requirements, student attitudes and learning outcomes to identify the professional learning needs of themselves and their colleagues. They understand the importance of reliable evidence to inform decisions and actions.

They make strong connections, virtual and real, with the wider professional community to raise awareness and develop relationships that help to improve science education outcomes for themselves and their students. They communicate effectively and respectfully with the wider school community, including parents and carers, to build productive relationships and identify and address issues that affect science teaching and learning.

Highly accomplished teachers of science initiate activities and projects to improve the quality of science teaching and learning in their schools. They facilitate professional learning. They enhance their colleague's knowledge of science and how students learn science. They initiate activities where colleagues compare how well students are progressing in their knowledge and understanding of science with how well students should be progressing. They promote activities that provide feedback to teachers about their practice and opportunities for other teachers to compare their practice with standards for highly accomplished science teaching.

Overview of the entry

In this portfolio entry you will show how you engaged colleagues purposefully in an initiative or project¹ that promoted professional learning and addressed an identified issue or need in relation to the quality of science teaching and student learning in your school. Your entry will demonstrate how your initiative strengthened the capacity of your professional community over an

¹ From this point, the terms “initiative” and “project” are used interchangeably in these guidelines

extended period of time and improved teaching practices and opportunities for students to learn science.

Your entry will include:

- **Documentation** that provides evidence of how you identified a need, or an opportunity, to improve the quality of opportunities to learn science for an identified group of students, how you engaged colleagues in a collaborative initiative to meet that need and how your students benefited from your initiative.
- One or two video recordings (no more than 10 minutes in total) that illustrate the role you played in facilitating the engagement of your colleagues in collaborative activities during the project.
- **Artefacts** you created as part of your initiative such as project plans or reports, meeting timetables, notes and minutes, observation guides, student surveys, reports, school newsletters and associated materials.
- **A written commentary** that assists assessors in understanding the context of your initiative, describes the main stages you passed through in planning and conducting your project, including the identification of a need or opportunity, developing and implementing a plan to meet that need, and provides evidence that your initiative led to improved professional practices and opportunities for student learning in science.

Design framework

This entry is designed to enable you to provide evidence of how you meet the standards for highly accomplished teachers in your current teaching context and sphere of responsibility or influence. You will demonstrate your ability to contribute to building the capacity of your professional community in relation to an identified, evidence-based need.

The entry is referenced to:

- A. The Australian Professional Standards for Teachers, Australian Institute of Teaching and School Leadership (AITSL) at the Highly Accomplished career stage.
 - a. <http://www.aitsl.edu.au/australian-professional-standards-for-teachers/standards/career-stage/highly-accomplished>
- B. Australian Curriculum: Science (AC:S)
<http://www.australiancurriculum.edu.au/science/rationale>
- C. Research into science education that informs professional knowledge and practice in relation to the focus of this entry

A. Australian Professional Standards for Teachers (APST), Australian Institute of Teaching and School Leadership (AITSL) Relevant to Entry 4

This entry requires you to provide evidence of your accomplishment relevant to the following *Australian Professional Standards for Teachers* at the Highly Accomplished career stage.

Standard 1: Know students and how they learn

Standard 2: Know the content and how to teach it

Standard 3: Plan for and implement effective teaching and learning

Standard 4: Create and maintain supportive and safe learning environments

Standard 5: Assess, provide feedback and report on student learning

Standard 6: Engage in professional learning

Standard 7: Engage professionally with colleagues, parents/carers and the community

The focus of this entry is on **Standards 6 and 7** although your entry might also provide evidence in relation to Standards 1 to 5, depending on the nature and purpose of your initiative.

B. Australian Curriculum: Science

The Overview of the Australian Curriculum: Science provides information that might assist in identifying the need for an initiative, or an opportunity, to enhance the quality of the school's science program.

<http://www.australiancurriculum.edu.au/science/rationale> .

There is no limit to needs or issues that you and your colleagues might address. Examples could include: student engagement in science; recent research and innovations in teaching and learning science; current levels of student achievement in science; and linking school science to science in the community and universities.

C. Research on professional learning and teacher leadership

There is a considerable body of research on the characteristics of effective professional learning, which shows that it is often most effective when based in the workplace and leads to either peer review of how well current practices are meeting student needs or sharing of new ideas about teaching science. There is also a considerable body of research on factors that affect the quality of teaching and student engagement in learning science, such as the prior ideas that students bring to their learning of scientific concepts.

Science teachers have much to learn from each other and from recent research on teaching and learning science. Effective activities include comparing how well students are progressing in their knowledge and understanding of science with how well they could be, or should be, progressing. They also include activities that provide feedback to teachers about their practice and opportunities to compare their practice with standards for highly accomplished science teaching. They “deprivatise” practice; that is, they enable the sharing of individual professional knowledge and practice with colleagues..

These are the characteristics of strong professional communities. So also are teacher initiative and leadership; these are necessary for strong professional communities and their success. For this entry, you will draw on and reference aspects of research on professional learning and teacher leadership, and show how it has informed your approach to promoting effective

professional learning among your colleagues to address an identified need or opportunity to improve teaching and learning science in your school.

[see Supporting information]

Requirements for Entry 4:

In this portfolio entry you will tell the story of how you initiated and managed a small-scale collaborative project to improve some aspect of teaching and learning science in your school. Readers will be looking for clear and convincing evidence that the project was conducted in collaboration with colleagues and met an important need or led to improved professional practices that improved learning opportunities for students. (You should ensure that your project description does not make it possible for judges to identify your school or any of its members.)

Your entry should be no more than ten pages long (single spacing, 12 point font). Documentation to support your entry should be attached.

WHAT NEEDS TO BE PROVIDED IN YOUR ENTRY?

Section 1: School context (one page)

An *outline* of the characteristics of your school and its wider community that provides a context for your entry.

- a. Type of school, its location (rural/remote/urban), jurisdiction, level (e.g. primary, secondary, F-12); single/multi-campus, co-ed/single sex boys/girls *[use drop-down boxes]*
- b. Total school enrolment, year levels, number and size of classes
- c. Mandated curriculum requirements. **Note:** your school/jurisdiction may mandate a variant of the AC:S. Please give relevant details if this is the case.
- d. Demographic composition and characteristics of the school and wider community, for example: cultural, ethnic and socio-economic backgrounds, diversity of language, integration of students with impairment or disability.
- e. The character of the science department in your school as it relates to planning your entry.

Section 2: Identifying the need (two pages)

In this section please address the following questions:

- a. *What need did your initiative aim to address?*
- b. Provide a brief, introductory overview of your initiative, identifying the area in which you and a small group of your colleagues decided to initiate and implement a project and the students whom it was intended to benefit. The APST at the Highly Accomplished level provides examples of areas where initiatives may be undertaken. Current levels of student performance or participation in science subjects or out-of-class science activities may be useful in identifying

the need, or the purpose of your initiative². Evidence about current school programs and teaching practices may also help you in identifying an area where collaborative action is needed. Student feedback and evaluations of their classes can be useful. (Summaries of data of evidence used in identifying the need should be attached.)

- c. *What did your analysis of the effectiveness of current programs and practices or student performance show?*

Provide a brief summary of relevant data as a justification for your initiative, based on a collaborative analysis of data collected, such as current level/s of student performance, engagement or participation, and/or current teaching practices (e.g. in relation to teaching standards or student feedback.)

Section 3: Planning for professional learning (two pages)

In this section you will provide a plan for your initiative, including a rationale for your strategy and an explanation of how it would make a significant difference for the defined group of students. Ensure that you cite the relevant research that you drew upon (e.g. about professional learning and managing change.)

[Documents/artefacts created in the course of your initiative (e.g. project plan, meeting notes, extracts from a diary, correspondence) that provide supporting evidence of your initiative, and its implementation, should be attached to this section]

- a. *What were the goals and targets for professional learning, including key milestones?*

Outline how your project plan integrated with existing school policies and practices.

- b. *What were the actions and steps in your plan to support implementation of effective professional learning and to ensure colleagues were actively involved?*

Describe how you made provision for effective professional learning. For example, time for meetings, comparative analysis of current levels of student achievement and participation in science, opportunities to learn new teaching skills with coaching and feedback, extending knowledge about science content and how students learn it, action research, building supportive relationships and sharing professional knowledge.

- c. *What research did you use in developing your plan?*

Summarise two or three examples of research, such as research on professional learning or teacher leadership, you found useful in developing your plan. Describe how the research supported your strategy to address the identified need.

² The collection and reporting of data must comply with the requirements of your school and the school's system regarding the protection of the anonymity of individuals

- d. *What steps did you include in your plan for monitoring change and evaluating the success of the initiative?*

Describe the methods you chose for monitoring the progress of your initiative and its effects; for example, on staff collaboration, teaching practices and student opportunities to learn.

Section 4: Implementation of change strategies (three pages)

In this section you will describe how you facilitated the implementation of your plan. Please address the following:

- a. *How did your plan work out?*

What happened? Describe briefly the meetings and other relevant events that took place during the implementation of your initiative. Provide one or two video recordings (no more than 10 minutes in total) that illustrate the role you played in facilitating the engagement of your colleagues in collaborative activities during the project

- b. *What factors helped or hindered the implementation of your initiative?*

Make reference, for example, to actions or events that affected the quality of collaboration and joint work that took place among your colleagues over the course of the project and the extent to which your plan was implemented.

- c. *How did you respond to these factors at the time they arose?*

Describe the leadership, organisational, professional learning and pedagogical capacities you developed and drew upon to support the progress of the project. Mention any findings that emerged from the monitoring of the project's progress that led you to amend your plan.

- d. *How did you foster the creation and exchange of knowledge to support the implementation of the change effort?*

Describe ways in which your initiative promoted professional learning among your colleagues. Mention any steps you took to promote awareness of relevant research, to share their expertise, or to document the knowledge that participants were creating from their own experiences in the project.

Section 5: Reflecting and reporting on outcomes: (two pages)

In this section you will provide evidence, based on an analysis of data you have collected over the course of the project, that the change effort under your leadership both met the identified need or opportunity and led to improved professional practices and/or learning opportunities for students. You will also briefly describe how you communicated your findings and experiences to colleagues and other members of the school community. Please address the following:

- a. What evidence do you have that your initiative has led to, or is likely to lead to improved professional practices among your colleagues and/or improved learning opportunities or outcomes for students?

- b. Reflect on the impact of the project, identifying your actions that proved to be most effective in achieving success and any unexpected outcomes. Support your reflections with relevant evidence and an analysis of its significance.
- c. What you have learned about leading and managing change and what you would do differently next time in a leadership capacity?
- d. Reflect on what you would recommend in planning to sustain and extend the change effort you led.

It is recognised that while some initiatives may not be fully successful, especially in terms of student outcomes, they can still represent clear and convincing evidence that the initiative was appropriate for an identified need, was implemented as planned and did engage colleagues in effective types of professional learning. In this case, special attention should be given to evidence from colleagues about benefits to them from their participation, reflections on why the initiative was not as successful as you hoped and what you have learned about yourself in relation to leading and managing a change initiative.

NOTE

Artefacts (maximum 5 pages)

Artefacts are documents or materials you have created in the course of your project. Examples may include extracts from project planning documents, data summaries; extracts from a diary written during the course of the project; meeting notes, correspondence, etc..

One or two taken at any point in the project's implementation (maximum ten minutes)

The purpose of the video is to provide evidence of your initiative in action. It might take a variety of forms; however it will need to show evidence of you working purposefully and collaboratively with colleagues in relation to implementing your project. It might, for example, be a brief section of a meeting with colleagues that provides evidence, for example, of:

- A clear purpose or agenda related to your project
- Including all members in the discussion and valuing their contributions
- Professional learning and sharing of ideas
- Discussion focused on teaching and learning and progress toward achieving the project aims
- Identifying and address to any problems or difficulties in implementation of the project
- Arriving at, or moving towards, agreed decisions

Summary of requirements for your entry (Guidance will be provided separately about format requirements (e.g. fonts and font size) on how to upload these components of your portfolio entry

Components of portfolio entry		Summary description	Limits
1. Written commentary	1. School context.	Provides contextual information about your school.	1 page
	2.1 Identification of the need for the project.	Brief introductory overview of the project that states how and why the need was identified and includes a summary and analysis of relevant information and data.	2 pages
	2.2 Planning for change	Description of rationale, goals, relevant research, actions and steps for implementation including plans for monitoring progress and steps taken to ensure involvement by all members of project team. Include supporting evidence of your involvement and leadership in the form of artefacts (e.g. planning documents, meeting notes, diary extract).	2 pages
	2.3 Implementation of change strategies	Description of how the project worked out, including your thoughts on how you promoted the development of professional community and learning among your colleagues. Include supporting evidence in the form of a 15 minute video clip of a meeting of the project team taken at any stage during the implementation of the project. The clip will exemplify how you have engaged and led colleagues to strengthen professional community and meet project aims.	3 pages
	<i>2.4 Reflecting and reporting on outcomes</i>	<i>Your reflections on outcomes of the project identifying your actions that proved to be most effective in (a) strengthening professional learning and community among your colleagues and (b) achieving the aims of the project.</i>	2 pages
2. Documentation	Evidence of how you identified a need, or an opportunity, to improve the quality of opportunities to learn science for an identified group of students, how you engaged colleagues in a collaborative project to meet that need and how your students benefited from that project.	Max. 5 pages	
3.	Documents/material created or used in the planning,	Max. 5	

Artefacts	implementation and evaluation of the project (Scanned)	pages
4. Video recording	Video clip of a meetings or event during the project group that provides evidence of your leadership	10 minutes

Supporting information

How will your entry be assessed?

Assessors will be looking for clear and convincing evidence that you have initiated and managed a project that strengthened professional learning and community activity in your school and significantly improved learning opportunities and/or outcomes for students. In your written commentary, assessors will be looking for a coherent description of your project, with clear links between its four stages. You will have demonstrated links between the need that the project aimed to address and the activities that you initiated. This will lead to a description of how the project was implemented and monitored, together with an insightful interpretation of, and reflection on, its outcomes.

Selecting the focus for your initiative

Your initiative will need a clear aim or focus. This will require you to gather evidence, or use existing evidence (for example, evidence about current teaching practices, student engagement or outcomes) to identify a need for improvement. Alternatively, your aim might be based on an opportunity to adopt an innovatory approach to some aspect of teaching science. Whichever approach you take, it will need to provide you with an opportunity to show how you have drawn on research and engaged colleagues in activities over time that have addressed that need, or acted on that opportunity.

The focus of your entry, and your role in it, will depend on the characteristics of the teacher and student cohorts, the characteristics of the school and wider community, your sphere of responsibility, or influence, and the current and future context for teaching and learning science in the school.

It is important that your initiative:

- is informed directly by an identified, evidence-based need or opportunity that relates to improving science teaching and learning
- is feasible in terms of availability of time and resources, and is cost effective
- is substantial enough to build on as a coherent whole over a period of a minimum of 1 semester to a maximum of 2 semesters
- takes into account in its planning the sustainability and/or transferability of positive outcomes.

What is a “professional community”?

Professional community is about the ways teachers work together. Professional communities build in time and opportunities for peer review based on evidence about teaching practices, opportunities for students to learn and learning outcomes. What defines a professional community is a shared commitment to work together to create an effective learning

environment. Professional communities are also strongly linked in to wider professional networks and associations, from which they also learn.

Members of professional communities habitually review their practice, individually and collectively, in the light of their professional values and standards for best practice. Research indicates that it is mainly by building strong professionals communities that schools improve the quality of teaching and student outcomes. Professional communities are highly desirable places in which to work.

Your immediate 'professional community' will usually be your science department, but it might include teachers from other departments or schools, and it might make connections that extend further; for example, to local tertiary institutions.

Selection of documentation and artefacts

The documentation and artefacts you select must support your written commentary. Review the questions required to complete your Written Commentary. These will help guide the choices you make about what to submit in support of your response. Be sure to adhere to the requirements for submission.

Documentation relates to evidence about how the particular need that your project aimed to address was identified, and about your role in the process. It could take the form of, for example (but not limited to), assessment data, attitudinal surveys of students, teachers or others; self-assessment of teacher effectiveness; resource inventories; level of parental or carer support; quality of internal/external communication; relationship with the wider community.

Artefacts consist of authentic items and materials that relate directly to the **project** and support the description and analysis of your role in its planning, implementation or evaluation.

Artefacts could include, for example (but not limited to), an annotated summary of the plan; annotated implementation strategies, and monitoring and intervention strategies required during the course of the project; results of evaluation of the project; evidence from a reflective journal maintained during the project; examples of internal/external communication that facilitated the project.

Video

The video should provide direct evidence of your leadership and purposeful and collegial interaction with members of your professional community.

If the video is taken during the **identification stage**, the documentation could include, for example, an interpretation or explanation of your role in raising awareness, assembling evidence, and purposeful collegial interaction.

If the video is taken during the course of the **planning, implementation or evaluation** of the project, artefacts could support and help explain your role and interactions with colleagues.

Selection of Research findings

You may be influenced positively in your professional learning by colleagues and adopt, adapt and share ideas and practice. For this entry you are expected to source and reference **authoritative research** that has influenced **you** in how to take a leadership role in effecting change in teaching/learning science.

This section does not expect a comprehensive literature review or analysis, but specifically an explanation of how your professional reading has informed the currency of your practice that has led to your raising an issue with your professional community, and that has generated a response.

You are expected to cite and reference sources appropriately to make it clear to assessors what you have drawn on that has informed your approach to completing **this particular entry**.