



Bridging gaps in music teacher education: developing exemplary practice models using peer collaboration

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1. Executive Summary

This project provided a cross-institutional framework for the development of a contextualised and integrated learning resource for music teacher education. A primary achievement of the project was the Music Teachers Oz (MTO) website, developed during the course of the project. This online forum and learning tool provided pre-service teachers, teachers, academics, members of the MTO team and the general public with the opportunity to interact and discuss issues surrounding music education.

The MTO project involved collaboration between a research team initially located at the University of Southern Queensland, Griffith University, Charles Sturt University, and the University of Tasmania. Additionally, an international reference group of education academics, implementing academics at participating universities, qualified teachers and pre-service education students contributed to the development of the website and associated learning resources which addressed gaps in music teacher education indicated in recent research literature.

Through the MTO project, educational case studies were developed and constituted the primary learning resources offered on the MTO website. Case studies were designed as integrated and contextualised learning resources in which qualified teachers profiled their teaching contexts and outlined real-world problems. These filmed case studies were intended to provide pre-service students with the opportunity to engage in authentic learning experiences and to bridge the gap between generalist and specialist education theory and practice in the “real-world”. Throughout the project, students responded to the case-studies as part of curriculum for university units in music and general teaching.

Through a process of improvement, involving both qualitative and quantitative evaluation, the learning resources and website were enhanced in terms of their capacity to facilitate high quality educational opportunities for pre-service teachers, and to facilitate collaboration between education academics, and the wider profession.

Evaluations indicated that the MTO project provided integrated and contextualised learning opportunities and helped build professional networks between academics within the discipline of education. Throughout the project, team members were able to establish international professional networks, aided by participation in conferences and facilitated by a wide range of website users. Website users, including pre-service teachers, academics, teachers and general public members were enthusiastic in their estimation of the website. Comments indicated that users viewed the MTO website as an exciting innovation for facilitating professional links. Additionally, through interaction with the case studies, the majority of student users were satisfied with the capacity of the website to provide insight into the “real world” of teaching.

Outcomes of the project have been widely disseminated by journal publications, presentations at national and international conferences, development of an international reference group and provision of the MTO website for public access for the duration of the project period.

The practical impact of the MTO project has been apparent in the national and international collaboration that has been sparked by the website and project. It is hoped that the MTO project can provide a prototype for the development of future collaborative learning and networking resources.

2. Introduction - Bridging the Gaps in Music Teacher Education

2.1 Aim and Scope

The National Review of School Music Education in Australia recommended the improvement of music teacher education for both specialist music teachers and generalist primary teachers (Pascoe et al, 2005). Other research suggests that music teacher education courses are overly theory-based rather than student-focused and school-centred, and that early-career music teachers are dissatisfied with their pre-service education (Ballantyne, 2007a). In direct response to this research, and to the National Review's recommendations, a learning and teaching project was designed to improve the transition between universities and schools for pre-service teachers. The underlying aim of the project was to better link theory and context-based practice in order to improve music courses in teacher education. This project, entitled "*Bridging gaps in music teacher education: developing exemplary practice models using peer collaboration*" aimed to address these identified gaps by focussing on the contextualisation and integration of music teacher education courses (Ballantyne, 2007a) through academic and school–university collaboration. Over time, the project came to be known as *Music Teachers Oz* (www.musicteachersoz.org).

2.2 Current Research: Existing knowledge applied in the project

Recent research challenges university educators to incorporate authentic activities and realistic contexts into teacher education (Bennett, Harper & Hedberg, 2002). In fact the need to provide learning opportunities which allow the transference of theory-based knowledge to real situations has been argued in the literature for over a decade (Grabinger, 1996). While a myriad of solutions have been presented, ranging from work place practica to re-design of learning environments, recent discussions have focused on the use of case-based learning, problem-solving and learning tools and activities presented in an online context (Herrington, Oliver & Reeves, 2003; Sorin, 2005). Case-based learning has been presented by several authors in response to the need for contextualised learning opportunities for pre-service professionals (Ertmer & Russell, 1995). Most recently, online environments have provided a convenient forum for the provision of contextualised and authentic learning activities within the context of mainstream academia. In this new breed of learning environments, constructivist philosophy and theories of problem-based learning (Savery & Duffy, 1996) and situated cognition (McLellan, 1996) guide the development of activities which engage students in complex and self-directed processes requiring creative problem solving, collaboration and the application of theoretical knowledge in a systematic fashion.

Review of this research supported the development of the *Music Teachers Oz* (MTO) project which aimed to provide a unique collection of practice-based learning activities to pre-service teachers and to provide opportunities for collaboration between pre-service and existing teachers, as well as academics. Underlying the project is the intention to better align the formal setting in which theory-based learning typically occurs with the complex, collaborative and multi-faceted "real-world" in which pre-service teachers must eventually function. If successful, such an endeavour would arguably go some way towards addressing the praxis shock experienced by beginning teachers (Ballantyne, 2007a).

2.3 Stakeholders and Project Structure

In keeping with aims of increasing collaboration across the sector and developing a learning and networking tool suitable both nationally and internationally, the MTO project was located across four universities in Australia over two years (2007 and 2008). Collaboration was established between teacher educators at Griffith University, the University of Tasmania, the University of Southern Queensland and Charles Sturt University during the MTO project. Over the course of the project several hundred students, teachers and academics contributed to the development of an online forum for professional collaboration and the presentation and trialling of effective authentic learning resources for pre-service teachers.

For the duration of the project, collaboration occurred between specialist and generalist music teachers, as well as students, practicing teachers and teacher-education academics. The majority of students involved in the project were enrolled in programs which would eventually qualify them as generalist primary teachers at Griffith University, Charles Sturt University, University of Southern Queensland and University of Tasmania. Most students involved in the project were enrolled either in the first or second year of a four year degree (typically a Bachelor of Education), and whilst courses at some of the institutions focussed on music education, others focussed on arts education more generally.

Collaboration with working teachers, from a diverse range of educational contexts including rural, urban, multi-cultural and Indigenous schools of widely varying sizes, was a primary component of the project. Both music specialists and generalist teachers contributed to the development of videoed case-studies of practice-based problems for the project website which constituted the primary learning-resource provided on the MTO website.

In addition to functioning as a forum for student learning, the MTO project and website facilitated the development of communities of practice. The online environment in which these were formed provided the unique opportunity for individuals involved in widely varied aspects of teaching and geographically distant areas to collaborate. Teaching academics, professional teachers and pre-service teachers from around Australia and internationally were provided with the opportunity to share professional knowledge and collaborate on designing challenges in music teacher education. The opportunity to interact with experienced professionals and student teachers in a non-challenging, online environment constitutes a secondary benefit of the project, directly aimed at decreasing professional isolation.

3. Outcomes

This project aimed to improve pre-service music teacher learning through the development, implementation and evaluation of *integrated* and *contextualised* teacher education initiatives. In brief, the project involved collaboration between researchers and qualified teachers to produce video case studies located in multiple music teaching contexts. These case studies were placed in a web-based learning format that enabled students to engage in discussion and interaction around the problems and issues raised by the teachers. Cross-institutional collaboration reduced the level of isolation faced by academics at the participating universities. The outcomes of the project, discussed below, were based on the need to improve pre-service teacher education through the use of authentic, real-world based activities and to increase collaboration within the profession.

3.1 Outcome One: Integrating theory and practice for pre-service teachers.

The primary aim of the project was to develop a tool for integrated teacher education by involving students in a participatory process that actively facilitated links between theory and practice, and between general education and music education. This process was specifically intended to assist pre-service teachers to relate knowledge presented in the course of formal academic teaching and learning directly to real-world scenarios. This was particularly relevant to pre-service music teachers for whom the divide between general education and discipline-specific university learning presents challenging discrepancies (Ballantyne, 2006). The development of learning resources which provided students with opportunities to practice the process of applying theory to professional practice was undertaken in direct response to calls in the research to smooth the transition into professional music teaching.

The necessity for pre-service teacher education courses to thoroughly prepare teachers for the realities of the classroom is well documented in the literature. Ballantyne's (2007a) findings show that early-career teachers perceived a need for teacher education courses to be integrated and provide opportunities for the continual development of knowledge throughout the early stage of their careers. In her study Ballantyne (2007b) proposes that attention be given to the realities of the classroom in order to prevent praxis shock and the associated high incidence of "burnout" among music teachers. Suggestions for improving teacher education provided by this author include "problem-based learning opportunities and interaction with a variety of music teachers in many different contexts" (Ballantyne, 2007b, p. 187). Such techniques support students not only in generating knowledge but also in developing self-directed learning skills, increasing the opportunities for education to become a lively discovery of reality (Henderson, 1992).

In addressing this project aim, MTO utilised theories of problem-based learning to develop and refine learning resources designed to enable students to become independent learners who apply knowledge and establish links between theory and practice across courses and contexts. Problem-based learning situations engage students in authentic activities based upon professional problems directly linking practice and theory (Boud & Feletti, 1991). This approach reflects the knowledge and skills valued in the classroom and prompts students to function and participate as members of a community of practice (Barab & Duffy, 2000). Students ideally become effective collaborators, as well as construct an extensive and flexible

knowledge base and develop effective problem-solving skills (Barrows & Keson, 1995).

In the MTO project, university education students were engaged with problem-based scenarios filmed in professional situations with teachers. Students interacted online with participants from their own and other institutions, as well as with the teachers in the case studies. Through this practice-centred approach, students were enabled to establish links between theory and practice (a) in music education courses and (b) across general educational theory and practice courses. This online collaboration was explicitly intended to move the courses involved in the project towards an integrated approach to teacher education.

3.2 Outcome Two: Contextualisation of pre-service teacher education

The second objective of the MTO project was contextualisation of music teacher education, again through development of the MTO website as a collaborative learning tool. Contextualised teacher education provides pre-service teachers with the means to apply knowledge and skills learnt in courses which utilise more “traditional” learning forums (i.e., lectures, tutorials, academic resources) to their future context as music teachers. In the current project, the case-studies provided students with insight into real-world contexts and the opportunity to apply both music and education theory to music teaching. In some instances contextualisation was thoroughly accomplished as students had the opportunity to interact directly via the website discussion groups with the case-study teachers.

Pre-service teacher education is designed to prepare beginning teachers for the early years of their career, an aim traditionally addressed through the use of techniques such as practicum placements. However, current research indicates that early-career music teachers may express dissatisfaction with pre-service teacher education, feel ill-prepared for the world of teaching, and experience disillusionment about the compartmentalisation of education and music subjects within traditional academic courses of study (Ballantyne, 2007a). Campbell and Thompson (2003) suggest that pre-service teachers may initially hold simplistic notions of what music teaching will be like because they have had little opportunity to engage with schools as “teachers”. The inclusion of valuable, relevant and real-life contexts for teaching music education in pre-service courses (Ballantyne, 2007a; Temmerman, 2006) could therefore improve early-career teachers’ perceptions of their courses, and better prepare them for the realities of the classroom.

In addressing this aim, the MTO project developed the online case-studies discussed previously. Multiple contexts, and constructivist approaches, as presented by the MTO website and case-studies, may mean “messiness” in music teacher education. As such, the problems raised by teacher educators, teachers (and hopefully by students as well) in the website were intended to have many solutions, no obvious ones, or to raise more questions. Arguably, this is a key component of a contextualised educational tool as it is reflective of real-life music teaching practice.

Care was taken in addressing this project aim to explicitly communicate the intention of contextualisation to participating students. Research indicates that teacher education courses ought to actively struggle with ways to cater for the multiple contexts that pre-service teachers are likely to encounter when they leave the “safety”

of their universities. In the design of this project, this aim was made explicit to students in their use of the MTO resources. For example, in discussing case-study problems there was no pre-emption of students' responses. Uncertainty of response was made inherent in the design of the learning resource which required students to self-evaluate and problem-solve, as in "real-world" contexts. Making students aware of the purpose of learning in this way was intended to facilitate motivation for the course, and encourage students to apply general education "theory" to the music classroom in the future based on this opportunity to practice.

3.3 Outcome Three: Academic development of teacher educators

Academic development of teacher educators through peer collaboration constituted the third project outcome for MTO. In the case of music teacher educators, it seems that discipline specific peer collaboration is important in minimising the professional isolation of music education academics.

Isolation is a theme that is synonymous with Australia's demography and geography which is characterised by a population concentrated in clusters and separated by large distances. Academics in music teacher education are often alone in their work environment and therefore have limited opportunity to engage with other music education academics. This can lead to the perception of being isolated as has been reported especially amongst early-career academics (Bazeley, 2003; Akerlind, 2005).

In addressing this aim, the project provided increased communication and collaboration across universities with the aim of enabling participating academics to develop effectively throughout their careers (Kreber, 2000). The MTO website was specifically developed as a resource for collaboration between students, teachers and academics in the teaching discipline and additionally modelled collaboration for pre-service teachers. The role of the MTO project as a collaborative venture for music teachers at various levels of the profession and for engagement the wider community of teachers was also an aim of the MTO project.

4. Approach and Methodology

This section draws on material previously published in “Ballantyne, J., Barrett, M., Temmerman, N., Harrison, S., and Meissner, E. (2009) Music Teachers Oz Online: A new approach to school-university collaboration in teacher education. International Journal of Education and the Arts.” and is published with permission of the International Journal of Education and the Arts. The full article can be found at <http://www.ijea.org/>.

During the course of the MTO project, the three primary outcomes were achieved through the development of an online resource designed to benefit students, professional teachers and academics nationally through collaboration between participating academics across Australia. The website design developed into a template for similar projects internationally and across disciplines.

4.1 Design of the Website

The Music Teachers Oz website (see Figure 1) was set up to provide opportunities for those interested in music teacher education to discuss issues, share ideas, news and resources and also to allow pre-service students to engage actively with case studies. Students were encouraged to work collaboratively within institutions, as well as with other universities, in-service teachers and lecturers from across Australia.



Figure 1. Music Teachers Oz webpage

The design of the website incorporated the use of ‘rooms’ to allow users to navigate around the site. It contained areas that were freely accessible to the public and a restricted area for student discussions. Some of the ‘rooms’ were:

The Public Room: In this room, everyone interested in music teacher education could read current music education news and discuss music education issues in the online discussion forum. This room attracted significant interest from those outside of the university sector, and so was a key place for students to go to in search of answers from the “real world”. It also became the place where beginning teachers raised issues and questions – sometimes answered by teachers, and sometimes answered by other students. In this space, resources could also be shared and participants could talk about their ideal teaching situations in the “Dreaming Room”.

The Case Study Room: Here, participating students could engage with a total of 15 different case studies as part of their course involvement with MTO. Students were asked to research and explore issues of significance to solve the “problems” presented in each case study. As the case studies did not have an inherent solution, the proposed problems were characterised by unclear goals, various possible solutions and real-life complexity which further encouraged students to reflect and develop multiple and non-traditional solutions (Fetherston, 2007). The case studies were presented in two categories – those with a music specialist focus and those with a general arts focus - to enable students to access the most relevant “problems” to their future teaching contexts. Each case study had an attached discussion forum, where students might engage with one another and the teachers from that case study, exploring the nature of the problem, and providing suggested solutions. Non-students could not access this section of the website, which was protected to prevent the viewing of children by non-enrolled student teachers.

The Research Room: This room included space for implementers, reference group members and the research team. In this room, participating academics could meet online to discuss, suggest and reflect on the project. This collaboration without geographic or time constraints allowed the development of effective teaching models and decreased the sense of isolation amongst the researchers. The ‘room’ was also used to collaboratively work on publications and ideas for future projects were shared.

4.2 Case Studies

In total 15 case studies were filmed and uploaded onto the website for pre-service teachers to investigate over the course of the project. As discussed previously, the case studies constituted the primary learning resource developed during the course of the project to address the need for improvements in pre-service teacher training. Development of the case-studies encompassed a pilot stage and a final stage. This planning process allowed for initial feedback to be gathered from participants and instrumentally improved the user-friendliness of the tool.

During the pilot phase in Semester 1, 2007, four case studies were available for students from the University of Tasmania. Students engaged with these case-studies as part of their course work and were encouraged to provide feedback. The feedback suggested that students would appreciate a greater variety to choose from which prompted the filming of 11 additional case studies. In the final stage of the project, from Semester 2, 2007 through to Semester 2, 2008, participating students were able to engage with 15 different case studies. During this stage, students from Charles Sturt University, Griffith University, University of Southern Queensland and

University of Tasmania were able to collaborate with peers at these institutions in their use of the case-studies.

The case studies were filmed within the teacher's work environment. Each of the 15 teachers interviewed were asked to identify a "problem" that they were currently encountering in their school in relation to music and arts education. Some teachers were specialist music teachers, but the majority were general classroom primary teachers who were enthused by music or arts education, and wanted to improve their practice. Some of the "problems" identified by the teachers included: how to integrate music and arts learning in an unstructured pre-school context; how to cater for music education within a gifted and talented program; and how to explore meaningful and authentic ways for music students to engage with the community. Problems were also located in a variety of settings including a rural school, a multicultural school, an Indigenous school and a one teacher school. All teachers were filmed answering the following questions:

- *Why did you want to be a teacher?*
- *How would you describe your school and students?*
- *What was your prior experience with teaching arts/ music?*
- *What are your views on music education and how confident do you feel teaching music and the arts?*
- *Where is the learning context?*
- *Please can you show us around the area where children will be learning?*
- *Why do you want children to learn music in this context?*
- *Have you ever tried to facilitate music/arts learning in this context/way before? If yes, what is your experience?*
- *What issues will pre-service teachers need to be aware of when relating to your context?*
- *Can you please state the overall problem in one sentence?*

In addition to answering these questions, some teachers were able to provide "snapshots" of themselves teaching, or student commentary on the "problem".

The case-study resource was designed to be interactive, as teachers were given the opportunity to discuss problems directly with the students via the online discussion groups. Throughout the first two semesters of the project (i.e., in 2007) most of the teachers engaged in online discussions with students and offered suggestions regarding the overall problem in the various learning contexts. The MTO website is currently available for viewing and can be accessed at the following web address: <http://www.musicteachersoz.org/moodle>.

4.3 Data Collection Tools and Evaluation Methodology

The effectiveness of the MTO website and case-studies as resources to encourage collaboration and contextualised learning opportunities for pre-service teachers were evaluated using qualitative and quantitative methodologies. Evaluation occurred during the pilot stage of the project and was instrumental in the development of the case-study resources. Evaluation during the final stage focused on student and teacher perceptions of the website and collaborative

processes as tools to facilitate integrated and contextualised teacher education and greater collaboration between teaching professionals. Data was collected for evaluation during the project using the following methods:

1. Questionnaires administered to participating students throughout the duration of the project (Appendix A);
2. Focus groups involving participating students throughout the duration of the project (Appendix B);
3. Interviews with participating teachers (Appendix C);
4. Reflections and focus group discussions with participating academics; and;
5. Comments of MTO website viewers and users collected via the website.

To ensure rigour, both qualitative and quantitative evaluative techniques were employed to evaluate student responses to the learning resources presented on the website and teachers' responses to involvement with the MTO project. Evaluative methodology used at the pilot and final stage of the project is discussed following.

4.3.1 Questionnaire

During both the pilot and final stage of evaluation participating students responded to a questionnaire evaluating their perceptions about the MTO website and integration of the case-studies into university teaching courses. Student's reported directly on the degree to which participating with the case-study discussion groups, problem solving and collaboration and using other aspects of the website had contributed to the integration of theory and practice in their learning experience.

The questionnaire was structured to investigate four areas including:

1. Student's learning;
2. Learning strategies used on the website;
3. Design of the website, and;
4. Overall perception of Music Teachers Oz.

In developing the questionnaire items and structure to address these areas, project aims (i.e., integration, contextualisation and collaboration) were divided into sub-learning and teaching aims which were underpinned by indicators suggested in the literature. These indicators were operationalised through items in the evaluation questionnaire.

For example, in examining the integration aspects of the project, the questionnaire drew on four areas in which this could be experienced (see Table 1).

Table 1. Indicators and questionnaire item numbers relating to the aim “Integrated teacher education”

Areas of integration	Indicators and item numbers
Integration across courses/universities	Connectedness through online collaboration (Questions 2g & Q2d)
	Connectedness across courses (Questions 4f, Q1b & Question Q2e)
Integration with the community	Increased inter-institutional collaboration (Question 2h) Increased links with community groups (Question 1e)
	Increased links between students & teachers, academics & teachers (Question 3d & Q4d).

In examining the contextualisation aspects of the project, the questionnaire drew on two areas where this could be experienced (see Table 2).

Table 2. Indicators and questionnaire item numbers relating to the aim “Contextualised teacher education”

Areas of contextualisation	Indicators and item numbers
Contextualised learning for pre-service teachers	Problem-based learning enhances the perceived relevance of learning contexts (Question 2b, & Q2c)
	Learning draws upon students’ prior knowledge to build understanding of music in education (Questions 1a, Q1d, & Q4c)
	Opportunities are provided for students to reflect on their own beliefs and theories of learning (Question 1c)
	The curriculum design reflects differences in teaching contexts (Questions 2f & Q3a)
Contextualised relationships between pre-service teachers, in-service teachers and academics	Interactive and productive relationships exist between pre-service teachers, in-service teachers and academics (Questions 1f, Q2a, Q4e & Q4g)

Items were developed to sample student responses to all relevant categories resulting in 28 items rated on a Likert scale, six open ended questions requiring written responses and six checklist questions relating overall enjoyment and overall rating of the website and demographic details, including age and gender.

As indicated in Appendix A, some item responses were based on a six-level Likert scale with responses ranging from “strongly agree” to “strongly disagree”. To minimise missing data and to provide a sensitive measure of opinions, the option of “neutral” or “not applicable” was not provided. Thus respondents chose between three levels of agreement (i.e., strongly, moderately and slightly) and similar levels of disagreement. Items 1i, 2i, 3g, 4h, 5 and 6 were open ended questions designed to be qualitatively analysed.

Factor analyses were again conducted on the final data set (including that gathered in the pilot phase; $n=299$). In the final structural evaluation, underlying indicators of structure were evaluated in light of the correlative relationships underpinning item groupings (Guadagnoli & Velicer, 1988). A factor analysis with varimax rotation resulted in only one factor which provided an undifferentiated picture with limited significance for further discussions.¹ More than 27 per cent of the items were loaded high on the first factor which explained over 44 per cent of the total variance. The results of this analysis indicate homogeneity amongst the test items. Specifically, these analyses indicated that the questionnaire measured the single dimension of students' overall reactions to the MTO website and case-studies as learning resources.

Based on the correlation of the scales and the findings of the factor analysis, reliability was established across the individual scales, as well as across the questionnaire as a whole. This was evaluated using Cronbach's alpha for internal consistency, and was satisfactory across all scales, falling between .60 and .80 (Burns, 2000). Evaluation of the factor analytic structure of the questionnaire and correlation based reliability coefficients indicated that the questionnaire was sufficiently valid and reliable.

Data was collected via the online questionnaire at the end of each semester. Participating students were sent the link to the questionnaire through the website, as well as given time to fill in the online questionnaire during individual lectures at their institution. Participation was voluntary and responses were anonymous. Participants were offered the opportunity to enter a draw to win a small prize. Two prizes were awarded to participating students during Semesters 1 and 2, 2008.

Two hundred and ninety-nine ($n=299$) students participated in the questionnaire which sampled students from all project semesters, excluding the pilot semester (Semester 1, 2007). This sample was drawn from the four universities that were actively involved in the evaluation of the project.

Quantitative analysis methods were used to evaluate questionnaire responses which could be numerically coded. For example, items using the 6-point Likert scale were re-coded to a nominal level by combining all agree and disagree responses into two categories of "Agree" and "Disagree". For each item the frequencies of combined positive and negative responses for each item (i.e., percentages) were calculated. Given the results of factor analysis no composite scores were analysed. Additionally, descriptive statistics were derived using SPSS Statistics 17. Content analysis (identifying major themes, key words and phrases) was used when analysing the qualitative data from open-ended questions derived from the evaluation questionnaire.

4.3.2 Focus Groups

Focus groups were used to support questionnaire results and provide a "richer" source of feedback. Students were given the opportunity to participate in focus groups at the end of each semester of involvement. The focus groups utilised a semi-structured question technique which explored five themes relating to students' perceptions of the case studies, their own learning and the website as a whole (see Table 3). Facilitators

¹ The criterion for factor extraction was the scree-plot.

for each focus group structured questions around major themes using variations on the example questions provided in Table 3.

Table 3. Themes and example questions used in student focus groups

Theme	Example Question
1. Reflect on the case studies	<p>“Is there one case that stands out in your memory?”</p> <p>“Explore reasons underlying selection.”</p>
2. Explore students’ perceptions of learning in relation to the case studies and suggestions for future adaptations of the project	<p>“Reflect on your learning in relation to the case studies: what did you learn from (a) the case studies, (b) the teachers’ presentations in the case studies, (c) interaction with other students?”</p> <p>“In what ways have your views on music education changed over the course of this semester?”</p>
3. Reflect on learning about teaching music	<p>“Please tell me how the <i>Music Teachers Oz</i> experience influenced your views on music education?”</p> <p>“Describe the ways in which your engagement with the website has influenced your confidence in teaching music in the future?”</p>
4. Explore students’ perceptions of learning in relation to suggestions for future adaptations of the project	<p>“What changes could be made to the project and/or the website to improve it?”</p> <p>“How could we make the site more useful for teachers in schools?”</p> <p>“Explore views of the website and suggestions for future adaptations of the project.”</p>
5. Reflect on the project website	<p>“What are the features of the site that you think are most useful for teachers in schools?”</p> <p>“What advice would you give to other students using the <i>Music Teachers Oz</i> website?”</p> <p>“What advice would you give to teachers?”</p>

During tutorials, participating students were given the opportunity to attend focus groups. Participation was voluntary and students were provided with drinks and snacks during the focus group discussions. In total, 6 focus groups were run, with 41 students attending over the two year period of the project. Data were recorded

and the transcript analysed in order to identify major themes, key words and phrases using content analysis. The process of qualitative data analysis included the preparation and organisation of the data, exploration and coding of the data, building of descriptions and development of themes as well as the interpretation and validation of findings (Cresswell, 2003; Burns, 2000).

4.3.3 Interviews

Interviews were conducted with participating teachers and, informally, with members of the project team and reference group. This third source of data was largely used to evaluate achievement of the third project outcome, the development of professional relationships and sharing of teaching resources between academics.

4.3.4 MTO Website

Finally, data was collected via online user feedback on the MTO website. Students, lecturers, teachers and members of the public accessing the site were able to provide comments on their perceptions of the site's effectiveness. This provided a valuable resource during the pilot phase which aided the development of the website as a tool for encouraging inter- and intra- professional collaboration.

5. Evaluation and Assessment against Outcomes

Formative and summative evaluation methods were applied throughout the project and are discussed below. Evaluation aimed to provide information for improving the website and learning resources and to determine the success with which the project met the three primary objectives of integration, contextualisation and collaboration. Specifically, formative evaluation methods were used at the pilot phase to improve the tools to better meet project aims, while summative evaluation methods were used to evaluate overall achievement of aims at completion of the project period. This structure was specifically chosen to ensure the input of students, implementers and other stakeholders directly in the development of the case-study learning tools and MTO website. Evaluation at the pilot phase allowed feedback to directly impact on improvement on the MTO website and learning resources.

5.1 Formative Evaluation

During the pilot phase (i.e., Semester 1, 2007) students from the University of Tasmania engaged with the website to investigate the case studies. Students were required to discuss the problem and solution online within each case study forum. Comprehensive feedback from participating teachers, students, implementers and the project team was collected after completion of the pilot phase. Data was gathered through student focus groups, implementer focus groups, meetings of the project team, interviews with teachers, and, administration of questionnaires to participating students. This feedback was used to guide the further development of the MTO website and case-studies. Overall 33 participating students provided feedback which was analysed and used to improve the MTO resources.

5.1.1 Participating Teachers: Interviews

Qualified teachers who participated in development of the four pilot phase case-studies were interviewed and asked to provide any suggestions or comments about their involvement in the project, perceptions of interacting with students who engaged with case studies and responses to student problem solving in light of practice-based experiences. Comments indicated that the process of interacting with pre-service teachers in solving real-world classroom problems was perceived as valuable by practicing professional teachers. For example, one participant commented:

“The students offered some solutions that I hadn’t thought of and yeah they were helpful in that respect just sort of giving me different ideas and while I may not have done exactly what they had suggested in the way they had suggested it, it did open up some different ways of thinking and looking at the problem as well.”

Participating teachers also provided their perceptions of the role of MTO in reducing professional isolation, both for students and for themselves:

“A lot of teachers read about other teachers’ situations or current competitions that are out there for music or websites that they can actually see how the projects are actually going and it seems to be something that teachers really like to have sort of a contact with. And

I think that is what the teachers are looking for when they go to the site looking at the newsletters and all that."

Finally, interviews of the four case-study teachers conclusively indicated their beliefs in the usefulness of the MTO case-studies as learning tools for pre-service teachers:

"For the pre-service teachers, I think it's just getting an insight into what's happening in classrooms. Getting a real hands-on look at what is actually happening in classrooms"

Overall, feedback from the participating teachers was very positive and indicated support for the usefulness of the MTO case studies. However, all four teachers mentioned the time cost of engaging in high-level collaboration with students. During the pilot phase, students accessing the case-studies interacted directly with teachers via the discussion groups. Teachers indicated that they would not be able to be involved as much in the discussion for the continuing semesters of the project given high personal workloads. This was an unfortunate finding as the direct interaction between teachers and students was considered to be a valuable aspect of the learning process. This modification was adopted for the remainder of the project and the role of discussion group moderator assumed by students' tutors.

5.1.2 Students: Questionnaire and focus groups

Analysis of questionnaires (see Appendix D) indicated that the project was received fairly well by students with 74 per cent rating it at least 'adequate'. In responding to the questionnaire, students indicated that the MTO website and case studies enhanced their opportunities for collaboration with peers and increased their learning opportunities:

"I really enjoyed the interaction I had with other students and there were many discussions that were interesting and informative."

Additionally, responses indicated that interaction with peers and working teachers in solving real-world problems enhanced personal identification with their role as future music teachers and provided practical teachings tools:

"I believe that I will be a motivated teacher in regards to music education as I am very passionate about music. The Music Teachers Oz discussion board has enhanced this belief through clarifying teaching approaches to music education as well as how to implement problem solving activities in the classroom."

Evaluation of questionnaire responses indicated clear areas for improvement including a need to increase the relevance of case studies to students' needs as teachers, a need for more variety in the choice of case studies, and a desire for greater interaction with the teachers from the case studies in the discussions forums. For example, students indicated the potential usefulness of the website to facilitate inter-state communication:

“[I valued] the communication links between different states, for example Queensland and Tasmania. This would be highly valuable in regards to the current 'national curriculum' debate”.

Another requested greater variety in case study topics:

“I think there needs to be more variety in topics of the case studies.”

In terms of integrated teacher education (i.e., project aim one), comments made by students such as “finding solutions to common problems and issues that teachers have when teaching music is positive” indicated that participating students valued the experience of engagement in authentic learning activities. Students reported that the feeling of “connectedness” gained through use of the MTO learning resources assisted them in developing effective problem-solving skills, preparing for the future and collaborating with peers (see Table 4).

Table 4. Responses to integrated learning questionnaire items

Question	Percentage of Sample Agree
“the case studies will help me on future field experiences” (see Q4f).	60
“working with others on real-life problems helped me feel connected to other students” (see Q2d).	54
“online discussion broke down communication barriers between students” (Q2g).	51
“Music Teachers Oz showed me how general education theory applied to practical problems in music education” (see Q1b).	66

Equally as important to students was the link between general education theory and music education (integration across courses). Students’ reported that the MTO website and resources helped establish this link. This finding was of fundamental importance and directly supported one of the major aims of the project - to minimise the “fragmented” nature of teacher education. However, students also reported that the facilitation through online reflections between teachers and pre-service students could be intensified. This desire for even greater collaboration could be used to inform similar future projects.

In terms of contextualised teacher education (i.e., project aim two), students in the pilot phase indicated that the cases studies encouraged them to relate the knowledge presented in all their music discipline and education units to their future professional practice. A majority of the pilot group reported that they liked the case studies (82 percent; Q3e).

Table 5. Responses to contextualised learning questionnaire items

Question	Percentage of Sample Agreed
“Music Teachers Oz increased my understanding of how to teach music” (see Q1a)	57
“problem-based approach of Music Teachers Oz helped me to see real links between schools and my university degree” (Q2b)	66
“using real-life problems increased my motivation to learn” (see Q2c).	66

Over half of the sample reported that the case studies increased their practical understanding of teaching music. This indicates that the case studies served to facilitate increasing levels of self-confidence and to prepare pre-service teachers for the real-world context of teaching. Additionally students appreciated the problem-based learning style employed in case-study design and reported that using highly contextualised case studies increased their motivation to learn.

5.1.3 Implementers: Focus groups and team meetings

Throughout the pilot phase of the project, regular meetings were held between the project team and various implementers at the institutions involved, to encourage collaborative development of teacher educators. Additionally, the MTO website was used during the pilot phase as a discussion area for current course objectives and assessment in education courses. Implementers and the project team were encouraged to share examples of productive pedagogies, assessment and implementation. As such, the MTO website provided implementers in the pilot phase the opportunity to discuss assessment items and course outlines. Discussions with implementers and project team members indicated support for the project and a feeling of greater collaboration directly resulting from involvement in the project.

Implementers were evaluated during the pilot phase, in focus group and team meetings. Comments indicated that implementers found the interaction with other academics particularly positive. They also emphasised the flexibility of the project design and gave some feedback on the discussion boards:

“One of the advantages I see in the project is the flexibility of the design – in that it is possible to use aspects of this project that ‘fit’ with units of study and not be obliged to participate in every aspect of the project.”

“Conversations with other academics working with pre-service teachers in other universities have informed my thinking about my own teaching and learning programs.”

Implementers valued the opportunity to collaborate on curriculum and assessment details of courses:

“Exchange of documents regarding assessment in this project provided me with other approaches to assessment at a tertiary level.”

They also commented on the role of MTO as a means of establishing student collaboration and as an effective tool for implementing problem-based and authentic learning and for exposing students to real-world contexts:

“I see this project as an opportunity to get students working in groups of 4-5 to actually try to solve the problem. It is one thing to discuss solutions, but for them to try and 'show us' how they will do it would be great.”

“Benefits for students include: dialogue with other students, exchanging ideas and perspectives, making an argument approach to Music education, reducing isolation and authenticity. Students can see and hear current practitioners discussing actual concerns.”

5.1.4 Website Comments

Evaluation of user comments on the website was also used during the pilot phase of the project. An unexpected strength of the project was the website’s popularity with non-students. The lively use of this public part of the website demonstrated substantial interest in music education and indicated that the MTO website could be developed as a resource not only for pre-service students and professional music teachers, but also generalist teachers and the wider public. One of the comments made by a public user best reflected the interest in the progression of the project:

“I think it looks great - what a wonderful approach. I hope we can find ways to use this and to build on this kind of purposeful (and very interesting) learning.”

The role of the website as a tool for the development of broad and diverse communities of practice was highlighted. Evaluations of user comments indicated the necessity of developing the role of the website as a tool to facilitate collaboration between music education academics, students and teachers beyond the original project team.

5.1.5 Outcomes of Pilot Phase Evaluations

Following analysis of results at the pilot phase, various aspects of the project were improved, as outlined below.

- Re- organisation of the case studies to make it easier for students to find case studies relevant to their field of study and interest.
- Development of a more detailed introduction to the website and project for new students. This aimed to facilitate user friendliness.
- Adjustments of the evaluation questionnaire for Semester 1, 2008
- Additional face-to-face discussions and group work at the Universities to compliment the online discussions surrounding case-studies.

5.2 Summative Evaluation

From Semester 2, 2007 several hundred students and academics at Griffith University, Charles Sturt University, University of Southern Queensland and University of Tasmania implemented a refined strategy of the MTO project. For this stage of the project students, were given the choice of 15 case studies, all showing different contexts throughout Australia. By the end of the second semester 2008, the website had over 2000 regular users, including participating students, music and generalist teachers, academics, implementers, team members and members of the public.

During the final phase, preliminary evaluations were conducted at the end of every semester following a process of continuous improvement. In total, 299 participating students provided questionnaire feedback on the usefulness of the MTO website as an authentic learning tool. Analyses of these data constitute the primary means of evaluating the project's achievements against the outcomes.

Results are discussed against outcomes one (i.e., integrated learning) and two (i.e., contextualised learning) in more detail below, followed by the discussion of the evaluation results of the participating academics (i.e., project outcome three; academic collaboration). In order to examine students' perceptions of the effectiveness of the MTO project, findings against each of the project aims (integration and contextualisation in teacher education and decreased academic isolation) will be addressed and discussed separately, followed by a discussion on the implications of these findings for future work in the area of music teacher education.

It is noted that preliminary results based on data gathered during the first year of the project are currently available (Ballantyne, Barrett, Temmerman, Harrison & Meissner, 2009). The current findings represent the results of analyses of the entire data set, gathered during the two year course of the project.

5.2.1 Integrated Teacher Education

Integrated teacher education involves students in curriculum that helps students to make links between theory and practice, between general education and music education, as well as relating the knowledge presented in all their music discipline and education units to their future professional practice (Aim 1)

On the whole, analysis of the evaluation questionnaire indicated that MTO was mostly viewed as having successfully provided opportunities for students to engage in integrated teacher education (see Table 6). As indicated in the table, a substantial majority of respondents felt that use of the MTO website and case studies improved their connectedness to other students, reduced communication barriers, helped them to integrate general education theory and practical music education needs, increased their awareness of real-life contexts, prepared them for practice, facilitated cross-institutional collaboration, provided enjoyable opportunities to network with teachers and helped learning.

Table 6. Evaluation questionnaire findings against the aim “Integrated teacher education”

Indicators	Item	% Disagree	% Agree	Mean score ²
1.1	Q2d) Working with others on real-life problems helped me feel connected to other students.	15.9	84.0	4.3
	Q2g) The online discussion broke down communication barriers between students.	27.4	80.3	4.1
	Q1b) Music Teachers Oz helped me see how general education theory applied to practical problems in music education.	5.7	94.2	4.4
1.2	Q2e) Working with others towards solving real-life problems helped improve the quality of my solutions.	11.9	88.0	4.4
1.3	Q4f) The case studies will help me on future field experiences.	27.5	87.9	4.4
	Q2h) The multi- university approach in MTO modelled effective collaboration.	12.2	87.8	4.4
	Q1e) Music Teachers Oz showed me how community groups can have an active role in school education.	10.6	89.4	4.5
2.2	Q3d) I enjoyed the contact I had with practicing teachers in schools.	9.9	90.0	4.3
	Q4d) I felt that the assessment associated with Music Teachers Oz helped my learning.	20.7	79.3	4.1

² Scores ranged from 1-6, with 1 = strongly disagree, and 6= strongly agree

Of particular importance were the reports that engagement with practice-based problems increased collaboration and connection with other students and that the online format minimised communication barriers, leading the way to successful collaboration between different universities. The collaborative online discussions which focussed on addressing real-life problems “helped students to improve the quality of their solutions” and were deemed important in helping them develop effective problem-solving skills. One student found the realistic context enabled a re-thinking of teaching styles and their applicability to learning:

“I realise that there are many ways to teach, and many people teach differently and not always the way you agree with. This doesn't make their way of teaching wrong as some students respond to that style of teaching effectively for their learning journey.”

One of the main goals of the project was enabling students to recognise relationships between the educational theories and their applicability in practical education. Of the 299 students, 94 per cent of the sample agreed that “MTO helped to see how general education theory applied to practical problems in music education”. This was an important finding as one of the major aims of the project was to minimise the fragmented nature of teacher education and allow students to apply accumulated knowledge to practical issues across their degree.

Participation for the vast majority of students also demonstrated “how community groups can have an active role in school education”. Another aspect of the emerging awareness of integration with communities was the perceived relationship between school-based practica and learning experiences: 88 per cent of the students agreed that the “case studies will help them on future field experiences”. This theme also emerged strongly in focus groups. For example, one participant stated:

“I think it's beneficial because it's the closest thing you can get to ... prac. It's like hands on. You learn ... [and] because you know it's a real situation, you take [notice of] it a bit more.”

Effective collaboration with stakeholders such as school boards, teachers and universities emerged as an essential element of learning for pre-service teachers. By using a multi-university approach and involving teachers in the case studies, this curriculum initiative “modelled effective collaboration” (88 per cent agreed). As one student commented:

“I liked the fact that teachers can still ask for ideas even after they become practicing teachers. Many minds working together collaboratively, is always going to produce a better result as the teaching can cover a broader range of learning styles.”

Additionally, online discussion groups utilised in the project were viewed by some students as valuable, but seemed to impede collaboration for a small minority of the sample group. Factors discussed by students included the anonymity of the online context. Alternately, some students disliked the necessity of posting their real name onto an internet forum:

“Possibly change from names to student numbers, or allow a choice as some people felt very uncomfortable knowing people who knew them were reading their responses.”

“I still found this type of communication very impersonal. I can see how others have interacted with other people and this is to [be] commended, but for me personally, I did not find I related to others.”

While these comments were made in questionnaire responses, they did not emerge in focus groups. Rather, focus group comments indicated that students would prefer even more engagement with various case studies within their particular course (students from collaborating universities engaged with different degrees of depth in this regard). However, these comments have implications for the future use of case-studies as a learning tool and indicate the possibility that while a majority of students will feel comfortable with the online format, a few would prefer other learning contexts or would need support in developing familiarity with an online format.

5.2.2 Contextualised Teacher Education

Contextualised teacher education provides pre-service teachers with the means to apply knowledge and skills learnt in all subject to their future context as music teachers by presenting both music and education theory in terms of their application to music teaching (Aim 2).

Overall analysis of the questionnaire responses provided substantial evidence that students considered engagement in this project and case studies as instrumental in encouraging them to relate the knowledge presented in music discipline and education units to future professional practice as teachers of music (Table 7).

Table 7. Evaluation questionnaire findings against the aim “Contextualised teacher education” (per cent of sample; n=299).

Indicators	Item	%Disagree	%Agree	Mean score ³
5.1	Q2c) Using real-life problems increased my motivation to learn.	11.2	88.9	4.5
	Q2b) The problem-based approach in MTO helped me to see real links between schools and my university degree.	10.5	89.5	4.5
5.2.	Q4c) Music Teachers Oz increased my understanding of how to teach music.	14.3	85.7	4.3
	Q1d) I began to see how music and the arts can be part of every child’s school experience.	3.8	96.2	4.9

	Q1c) The case studies made me think about my own theories of learning.	10.1	89.9	4.5
5.3	Q2f) Engaging with multiple case studies highlighted the importance of understanding the learning context.	12.2	87.8	4.4
	Q3a) The materials and activities structured around Music Teachers Oz website have prepared me to teach music.	18.0	82.0	4.1
5.4	Q1f) The relationship I formed with other students, teachers and lecturers will inform my future practice as teacher.	20.6	79.4	4.2
	Q2a) Music Teachers Oz modelled effective music education approaches for me to follow.	14.1	85.9	4.2
6.1	Q4e) I felt supported by the teachers and lecturers.	18.6	81.4	4.2
	Q4g) I will use the website again when I begin teaching.	17.3	82.7	4.3

³ scores ranged from 1-6, with 1 = strongly disagree, and 6= strongly agree

As indicated in Table 7, a large majority of the students felt that engagement with the MTO project assisted them to make “real links between schools and their university studies”, increased practical understanding of how to teach music and strengthened their confidence that they would make good music teachers in the future.

These findings are highly significant in terms of the development of an effective contextualised learning resource. If reports of the current sample generalise to other student populations, use of the MTO case studies or similar resources would be highly likely to result in an increased level of self-confidence for pre-service teachers and to positively influence the way they teach. Engagement with the MTO project was arguably highly beneficial for the sampled students as “beliefs are far more influential than knowledge in determining how individuals organise and define tasks and problems and are stronger predictors of behaviour” (Pajares, 1992, p. 311). These findings suggest that a considerably higher percentage of students who engaged in this project exhibited confidence in teaching music than in many previous studies on pre-service generalist teachers’ confidence in music education (see Temmerman, 1997; Russell-Bowie, 2002). Arguably, the MTO project made inroads towards addressing the issues of teacher confidence raised in the National Review of Music Education (2005). As an aside, a substantial majority (96 per cent) of respondents felt that “they began to see how music and the arts can be part of every child’s school experience”

(see Table 7). Given the likely future professional isolation of pre-service music teachers, confidence in the value of their subject area is another useful outcome of engagement with the MTO project and case studies.

Comments on the questionnaire supported the finding that students were more motivated to learn in the area following their engagement with “real-life” case studies:

“I think the fact that these case studies are real people's problems motivates me more than a case study that someone has made up. There is more of a connection and you want to help more knowing that the person on the other end probably will read your suggestions and may even implement them. That is pretty cool.”

“Music Teachers Oz gave [me] a great opportunity for people to face and try to resolve problems which actually occur in real classrooms. This has been a fantastic thing for me as I haven't been in a classroom as a graduated teacher yet and I feel more informed about problems which may arise and better equipped to solve them.”

Overall, in terms of the development of a contextualised learning resource for pre-service music teachers, analysis of questionnaires suggest that these pre-service teachers are beginning to relate the knowledge in their music education discipline to their professional practice. This is supported by the reports of 80 per cent of the sample who agreed that relationships with other students, teachers and lectures gained during the course of participating in MTO would inform their future practice as teacher. Opportunities for these links to develop will be applicable to students when on their school practicum in both generalist and music classrooms.

5.2.3 Academic Development of Teacher Educators

Academic development of teacher educators: Peer collaboration is an important aspect of academic development. In the case of music teacher educators, it seems that discipline-specific peer collaboration is important in minimising the professional isolation of music education academics (Aim 3).

Overall evaluations showed that the perceived isolation of all team members has decreased significantly since the beginning of the project. The emerging community of practice provided new ideas on practice and theory within music teacher education in general and the project of MTO specifically. The project team met on a regular basis throughout the first six months of the project. They recorded and transcribed the meetings to be used as data together with emails and teleconference transcripts. Consideration of this data indicated the development of a working community of practice amongst team members which was effective in facilitating the smooth running of the MTO project and, in some instances, on the developed of shared teaching and assessment resources across institutions participating in the MTO project.

5.3 Continuous Improvement of the Learning Resources

The process of developing MTO resources was evaluated by comparisons of student satisfaction ratings, as measured by the questionnaire, between the pilot (Semester 1, 2007) and the overall project (Semesters 2, 2007, 1 and 2, 2008). Comparisons showed that the improvements made after the pilot phase increased the usefulness of the case studies and the MTO website as integrated and contextualised learning resources. Students' appreciation of the experience of engaging with the Music Teachers Oz project increased between the pilot and final stages as a result of the improvements suggested by pilot phase analyses, as demonstrated in Table 8 below.

Table 8. Comparison of pilot and final responses

Question	Percentage of Pilot Sample Agreed	Percentage of Final Sample Agreed
MTO project "will help them in future field experiences"	60	88
"Working with real-life problems helped to connect with other students"	54	84
"the problem-based approach of MTO helped them to see real links between schools and their university degree"	10	90
MTO "helped them to see how general music theory applies to practical problems in music education"	66	94
"MTO showed them how community groups can have an active role in school education"	51	94
"Online discussions broke down communication barriers between students"	51	80
"The case studies make [student] think about own theories of learning"	68	90
Student "began to see how music and the arts can be part of every child's school experience"	77	96
"Relationship they formed with other students, teachers and lecturers will inform their future practice as teachers"	43	80
"MTO modelled effective music education approaches for [student] to follow"	51	86
"Using real –life problems increased [student's] motivation to learn"	66	88
Student likes the case studies presented on the MTO website	82	88
"MTO approach is effective and worth following"	51	86

As indicated in the table, the proportion of the final sample which agreed to the usefulness of MTO learning resources increased when compared with questionnaire responses from the pilot phase. Specifically, students reports of how useful the MTO training tools were to their preparation for real-world teaching, collaboration with peers, perceived value of music education to school children, internalisation of theories of learning and knowledge about practical teaching strategies improved over the course of the project. These results indicate that continuous improvement of the MTO as a learning resource has paid off in terms of perceived usefulness and relevance to pre-service teachers.

6. Discussion: Implications for the Development of MTO in the Future

Overall, the MTO project achieved the aim of providing greater connection between research and teaching in Australian music education. This was specifically achieved through the development of new curriculum models that responded directly to research recommendations for music teacher education programs.

6.1 Implications for Music Teacher Education

The MTO project trialled an approach to improving music teacher education across institutions, particularly in terms of the ways students can apply their developing understandings of music education to multiple contexts. Evaluation of student reactions to use of the MTO resources indicated that a majority found the case studies and the website to be an integrated and contextualised resource which helped them to feel better prepared for the real world of teaching. Additionally, academics and implementers who shared curriculum, assessments and the website resource reported profiting from the opportunity for collegial collaboration afforded by use of the MTO website.

Given the achievement of these successful outcomes, it is hoped that the current project may provoke further trials of alternative approaches to music and arts education in teacher education courses. Specifically, it is proposed that the MTO project could be directly applied to other institutions both nationally and internationally. If this were to occur, the following issues should be considered when designing similar curriculum approaches. It is suggested that online problem-based learning similar to that developed during MTO:

- allow students the opportunity to access online learning resources in addition to both classroom and practicum placement;
- facilitate collaboration between students through an interactive approach to knowledge development and creative teaching resources;
- consider archiving issues, particularly with the aim of developing further learning-resources for future use by students and academics;
- induct students appropriately to the online format and establish formalised guidelines, which acknowledge appropriately the valuable contribution provided by qualified teachers in sharing their own challenges; consider the moderation of discussion groups for each case study to ensure participating teachers avoid “interaction fatigue”;
- monitor case studies to ensure they represent current, real issues; and;
- support interaction with the online case studies with face-to-face discussions in tutorial groups.

Consideration of these factors would facilitate use of similar online, case study based learning across institutions.

6.2 Factors Critical to the Success of the Approach

Most important for a collaborative project like MTO are the people engaged directly in project work. The participation of the reference group, case-study teachers, students and project assistants (Susanne Garvis, Ellen Meissner and Tammie Olm-Madden) were all critical to the success of the MTO project.

Special mention has to go to Michael Sankey from the University of Southern Queensland who filmed case-studies and supported the website. Without his on-going support for the website this project would not have been possible.

Furthermore without the teachers sharing their experiences and struggles in their day-to-day life no case studies could have been up-loaded onto the website as learning resources for pre-service students. The implementers at the universities who supported the project throughout the three years devoted a lot of their time and helped creating a great learning experience for students.

Institutions who wish to develop and apply the approach used in MTO to facilitate real world learning opportunities for students should consider the quality and enthusiasm of the implementation team, as this was a critical factor for success in the current project.

6.3 Challenges

Some technical problems occurred throughout the past three years including spam emails and creation of accounts that included spam. This prompted the project team to change the way of creating new accounts. A more secure process of verification by the research assistant or chief investigator was utilised to ensure spam-free account setup. The project used MOODLE for the website design as this is open source software, freely available. However, some students found it hard to navigate around the website and posted comments to this effect. In any future applications of the methodology, researchers could consider alternate website design software. However, students' reports of the usefulness of the resource did not seem to have been detrimentally influenced by design.

The lifelines of the website were another factor which impacted on the success as after the first year and up-loading of all 15 case studies the website became somewhat static. There where no new case studies and teachers previously involved in the discussion with students had moved on, some changed schools, jobs or went travelling. Again, future applications of the methodology should consider strategies to ensure that case-study content remains current and that participating teachers are freed from potentially draining use of their time.

The overall perception of the project was positive both amongst students, teacher, implementers, as well as interested public and music teacher educators. A great interest in the issue of music teacher education was evident in the number of users (over 2000) regularly accessing the website and using the public discussion board. Members are located in all states and territories of Australia, New Zealand, Portugal, Singapore, United States of America, United Kingdom, Finland, Canada, Switzerland and Thailand. The opportunity to extend collaboration internationally via the MTO website constituted a primary advantage of the project. In terms of professional support and academic collaboration in a profession subjected to marked degrees of isolation, this constituted a primary strength of the MTO project, and one which may be readily replicated in future designs.

6.4 Dissemination of Findings

Considerable effort has been expended by the MTO team members in disseminating project outcomes across the higher education section, both nationally and internationally. In accordance with the ALTC Dissemination Framework this has included not only publications and the project website, but also wide dissemination across institutions in various formats including conference presentation. Publications arising from the project included the following:

List of Journal publications:

- Ballantyne, J., Barrett, M., Temmerman, N., Harrison, S., and Meissner, E. (2009) Music Teachers Oz Online: A new approach to school-university collaboration in teacher education. *International Journal of Education and the Arts*.
- Barrett, M., Ballantyne, J., Harrison, S., and Temmerman, N. (submitted April 2008) Building a community of practice: reflective narratives of academic learning and growth. Submitted to *Reflective Practice*.
- Ballantyne, J., Barrett, M., Harrison, S., Temmerman, N., and Meissner, E. (2008) Music Teachers Oz: Learning in teacher education. *Music In Action*. 5(4), 24-25.
- Ballantyne, J., Harrison, S., Barrett, M., Temmerman, N. (2007, 8th -11th July). Working together across institutions: Fostering collaboration within higher education. Poster presented at the HERSDA National Conference, Adelaide
- Ballantyne, J., Harrison, S., Barrett, M., Temmerman, N., and Garvis, S. (2007) Bridging Gaps in Music Teacher Education. *Music Forum*. 13 (3), 43-44.

Conference presentations and workshop:

- Ballantyne, J., Harrison, S., Barrett, M., Temmerman, N. (2008) Bridging Gaps in Music Teacher Education. Workshop presented at the Music In Schools and Teacher Education Commission, Rome.
- Harrison, S., Ballantyne, J., Barrett, M., Temmerman, N. (2008) Authenticating music teacher education: Challenging pedagogical norms. Symposia presented in July 2008 at the International Society of Music Education Conference, Bologna July 20 – 25, 2008
- Ballantyne, J., Harrison, S., Barrett, M., & Temmerman, N. (2007, 8th July – 11th July). Working together across institutions: Fostering collaboration within higher education. Poster presented at the HERSDA National Conference, Adelaide
- Harrison, S., Ballantyne, J., Barrett, M., & Temmerman, N. (2007, 29th June – 1st July). Building communities of music education practice: Peer Collaboration in music teacher education. *Music in Australian Tertiary Institutions: Issues for the 21st Century*. Griffith University. Retrieved 20th February, 2008 from the World Wide Web: <http://www.nactmus.org.au/NACTMUS2007/>

In order to “bridge the gap between research and practice” it was considered to be equally important to engage practitioners throughout the project. This engagement provided valuable feedback on the application of the project and direct dissemination of the project to teachers, who could use the website to connect with colleagues.

In the early stages of the project, consultation with national and international music educators ensured a broad view on the topic as well as affording early dissemination of the ideas to an international audience. Further aspects of the dissemination strategy included:

- engagement with the reference group throughout the development of the project;
- engagement with teachers as potential users of this website throughout the project development;
- engagement with pre-service teachers throughout the development of the project and throughout the project for critical insights into themes including usefulness, further possibilities of improvement and personal valuation;
- engagement with various academics in music education to reducing academic isolation through use of the project and website;
- formative evaluation of student’s perception of the MTO project as part of their university learning to ensure continuous improvement of the case studies as integrated and contextualised learning resources;
- reports to the Australian Learning and Teaching Council;
- development and availability of the MTO website (www.musicteachersoz.org) which was publicly accessible for the duration of the project and is currently still publicly available;
- features in local and national newspapers (The Australian) and local and national news (ABC news);
- on-going meetings with key stakeholders within higher education and government and discussions at conferences and project meetings have been used to discuss further potential use of the project and implications for policy and curriculum development, and;
- publication and dissemination of a regular newsletter, sent to website participants, the MTO reference group and other interested stakeholders.

In addition to the dissemination methods indicated above, discussions and meetings with national and international members of the reference group ensured that the project outcomes were shared with a broad community of interest both nationally and internationally. Team leader Julie Ballantyne attended the 2008 “Music in Schools and Teacher Education Commission” in Rome during July, 2008. This allowed the MTO project team to widely disseminate coalescing outcomes of the project with other professionals in an international forum. Three members of the team (Margaret Barrett, Scott Harrison and Julie Ballantyne) also presented a symposium at the International Society for Music Education world conference held in Bologna, July 21-25, 2008.

International members of the reference group provided ongoing feedback throughout all stages of the project. Their perspectives were referred to particularly in reflecting

on the project's value to the international community. Formation of the MTO international reference group (including Dr Jan Packer, Dr Jackie Wiggins, Dr Kathryn Marsh, Professor Gary McPherson, Assoc. Professor Sam Leong, Dr Steve Dillon, Dr Elizabeth MacKinlay, Professor Huib Schippers, Dr James Cuskelly, and Professor Graham Welch) provided an efficient means of dissemination the learning resource developed during the MTO project. The use of international professional collaboration throughout the project demonstrated the role of MTO methods of internet based collaboration in linking individuals across locations, providing them with the opportunity to reflect on their practice, ideas and actions, and, encouraging professional networking.

Perhaps most saliently, as the primary outcome of the project, the www.musicteachersoz.org website has been shared with academics, students and interested practitioners nationally and internationally. Development of the MTO website as an educational and collaborative tool has constituted a primary achievement of the MTO project.

6.5 Linkages

In addition to evaluation of student, teacher and academic opinions about the website, interactions with website users via the discussion group and comment section indicated that the MTO website ultimately served to reduce professional isolation amongst music teaching professionals of various levels. In fact, throughout the project, linkages were made possible across disciplines and countries and while this was partly done through the attendance at multiple conferences by several team members and regular project meetings, provision of the MTO online discussion forum also engaged people. This was well demonstrated by an email received by Michael Griffin, Head of Music at Dubai British School (see Figure 2).

With the aim of facilitating further linkages internationally, information about the project including contact details, reference group members, newsletter and publications can be accessed through the project website: www.musicteachersoz.org. Four of the 15 case studies are available to the general public under <http://www.musicteachersoz.org/moodle/course/view.php?id=26>.

The project generated considerable interest internationally across the United Kingdom, Asia and the United States. This was made possible by the reference group members who shared the projects with their colleagues and through the dissemination strategies employed from early on in the project. The Department of Education, Science and Training (DEST) also discussed the potential of using the project website and underpinning ideas as a template for a National Music Education portal.

The collaboration with academics from The University of Tasmania, Griffith University, University of Southern Queensland, University of Queensland and Charles Sturt University as part of the project has highlighted the need for a stronger leadership approach and increased collaboration between academics in music teacher education. The significant achievements accomplished in this area through the MTO project require ongoing consolidation through the development of a coherent set of values and practices in music teacher education across Australian universities. The focus of this would ideally be on improving student learning and reducing academic isolation.

“Dear Music Teachers Oz team,

Thank you for your recent newsletter. . . further to the discussion on this [MTO] forum, the association of private bilingual schools in Thailand has agreed to invite one of the forum members, Michael Griffin, to do some workshops here in Bangkok when a mutually convenient date can be arranged. . .

The visit took place in early October and consisted of 4 very full days with APEP (the Thai Bilingual Association) and Elektra (The school host). It was a very rewarding venture. As well as musical workshops with the school choir and symphonic band (which was a terrific standard!), I gave staff workshops in:

- creative education
- Study, stress and Music
- Multiple Intelligence
- Emotional intelligence and music education
- Learning, curiosity and motivation.

It was because of your forum that Mr Adrian Jones from Thailand made contact with me. So thank you for your forum and the opportunities thus created.

Michael Griffin
Head of Music
Dubai British School”

Figure 2. Email Received from MTO Website User

Based on the networks and practices established throughout the Music Teachers Oz project the leadership project proposal (submitted 2008 to ALTC) aimed to further establish a coherent set of values and practices in music teacher education across Australian universities. Julie Ballantyne also participated in other ALTC projects (e.g., The Australasian Society for Computers in Learning in Tertiary Education) mainly in an advisory position based on her experience with the website as teaching tool.

It is expected that the sharing of this project will continue over the next few years, as publications (currently in press or in submission) become available to the international community. It is therefore expected that the international links already formed will be extended in the future.

The MTO website and project has demonstrated a framework for professional collaboration between students, teachers and academics in the discipline of music education. As such the project has arguably made a valuable contribution towards addressing identified gaps in music teacher education and reducing professional isolation. It is hoped that the project and MTO website will serve as a prototype which would ultimately enable others interested in music teacher education to further exchange ideas, access and up-load resources and continue on the various discussion via similar websites.

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Appendix A:

Evaluation Questionnaire for Music Teachers Oz Website

Thank you for your involvement in the Music Teachers Oz Project this semester. Research from this project will be used to inform the teaching and learning of music education for pre-service music teachers, and enhance the experiences of undergraduate music education students in the future.

We really value your feedback! Through your responses, we can develop the Music Teachers Oz Project. Please take the time to read each question before responding.

For each statement, please indicate your level of agreement by circling the appropriate response. *Please respond to all statements.*

1) Section 1: These questions seek feedback concerning your learning

	Strongly Disagree 1	Somewhat Disagree 2	Disagree 3	Agree 4	Somewhat Agree 5	Strongly Agree 6
Q1_a Music Teachers Oz helped me see how general education theory applied to practical problems in music education.	1	2	3	4	5	6
Q1_b The case studies made me think about my own theories of learning.	1	2	3	4	5	6
Q1_c I began to see how music and the arts can be part of every child's school experience.	1	2	3	4	5	6
Q1_d Music Teachers Oz showed me how community groups can have an active role in	1	2	3	4	5	6

school education.						
Q1_e The relationships I formed with other students, teachers and lecturers will inform my future practice as a teacher.	1	2	3	4	5	6
Q1_f I believe I can be a good teacher of music.	1	2	3	4	5	6
Q1_g The idea of teaching music excites me.	1	2	3	4	5	6

i) Please add comments to explain your responses in the above section:

2) Section 2: These questions seek feedback concerning the learning strategies used on the website

	Strongly Disagree 1	Somewhat Disagree 2	Disagree 3	Agree 4	Somewhat Agree 5	Strongly Agree 6
Q2_a Music Teachers Oz modelled effective music education approaches for me to follow.	1	2	3	4	5	6
Q2_b The problem-based approach in Music Teachers Oz helped me to see real links between schools and my university studies.	1	2	3	4	5	6
Q2_c Using real-life problems increased my motivation to learn.	1	2	3	4	5	6
Q2_d Working with others on real-life problems helped me feel connected to other students.	1	2	3	4	5	6

Q2_e Working with others towards solving real-life problems helped improve the quality of my solutions.	1	2	3	4	5	6
Q2_f Engaging with multiple case studies highlighted the importance of understanding the learning context.	1	2	3	4	5	6
Q2_g The online discussion broke down communication barriers between students.	1	2	3	4	5	6
Q2_h The multi-university approach in Music Teachers Oz modelled effective collaboration.	1	2	3	4	5	6

i) Please add comments to explain your responses in the above section:

3) Section 3: These questions seek feedback concerning the design of the website

	Strongly Disagree 1	Somewhat Disagree 2	Disagree 3	Agree 4	Somewhat Agree 5	Strongly Agree 6
Q3_a The materials and activities structured around the Music Teachers Oz website have prepared me to teach music.	1	2	3	4	5	6
The design of the Music Teachers Oz website is user friendly.	1	2	3	4	5	6

Q3_b The design of the discussion board is user friendly.	1	2	3	4	5	6
Q3_c I enjoyed the contact I had with practising teachers in schools.	1	2	3	4	5	6
Q3_e I liked the design of the case studies.	1	2	3	4	5	6
Q3_f I enjoyed the choice of case studies.	1	2	3	4	5	6

g) Please add comments to explain your responses in the above section/s:

4) Section 4: These questions seek feedback about your perceptions of Music Teachers Oz

	Strongly Disagree 1	Somewhat Disagree 2	Disagree 3	Agree 4	Somewhat Agree 5	Strongly Agree 6
Q4_a Overall, I learnt a lot about music education in schools.	1	2	3	4	5	6
Q4_b Overall, I feel I have developed my approach to music education.	1	2	3	4	5	6
Q4_c Music Teachers Oz increased my understanding of how to teach music.	1	2	3	4	5	6
Q4_d I felt that the assessment associated with Music Teachers Oz was helpful for my learning.	1	2	3	4	5	6
Q4_e I felt supported by the teachers and lecturers.	1	2	3	4	5	6

Q4_f The case studies will help me on future field experiences.	1	2	3	4	5	6
Q4_g I will use the website again when I begin teaching.	1	2	3	4	5	6

h) Please add comments to explain your responses in the above section:

5. What features of the Music Teachers Oz learning experience were particularly positive?

6. What would you recommend to improve the Music Teachers Oz learning experience in the future?

7. Overall, how would you rate the Music Teachers Oz project?

- ☐ Excellent
- ☐ More Than Adequate

- ☐ Adequate
- ☐ Less Than Adequate

8. Do you believe the Music Teachers Oz project is relevant to your needs as a teacher?

- ☐ Yes absolutely
- ☐ Yes mostly
- ☐ Not really
- ☐ Definitely not

9. University attended (please tick):

- ☐ University of Southern Queensland
- ☐ University of Tasmania
- ☐ Charles Sturt University
- ☐ Griffith University
- ☐ other (please specify)_____

10. Course (please tick):

- ☐ Bachelor of Education (primary)
- ☐ Bachelor of Primary and Middle Schooling
- ☐ Bachelor of Arts/Bachelor of Education (primary)
- ☐ Bachelor of Music/ Bachelor of Education (primary)
- ☐ Bachelor of Music/ Bachelor of Teaching
- ☐ other (please specify)_____

11. Gender (please tick):

- ☐ Male
- ☐ Female

12. Age (please tick):

- ☐ Under 20

- ☐ Under 20
- ☐ 20-24
- ☐ 25-29
- ☐ 30-34
- ☐ 35-39
- ☐ 40-44
- ☐ 45 or older

13. We would really appreciate being able to contact you should we need to clarify any of your responses. This would be completely confidential. Are you willing to be contacted?

Yes

No



Your name: _____

Contact phone number: _____

Email: _____

**Thank you very much for your time and effort in
completing this questionnaire 😊**

Appendix B:

Student Focus Group Questions

1. Reflecting on the case studies – is there one case that stands out in your memory? Why? How did you interact with this case study? What did you learn from this case study? What were the most effective features of this case study? How could we make the case studies more authentic?
2. Reflecting on your learning (specific): What did you learn from the case studies? The teachers' presentations in the case studies? From interaction with other students about the case studies? What other ways could we use the case studies to enhance student learning? What other suggestions could you make for adding to / changing the website to enhance student learning? Please can you describe a particularly useful experience you had whilst engaging in the project? Please can you describe where you experienced difficulties in engaging with the project?
3. Reflecting on your learning (broad view): In what ways have your views on music education changed over the course of this semester? Please tell me how the Music Teachers Oz experience influenced your views on music education? Describe the ways in which your engagement with the website has influenced your confidence in teaching music in the future?
4. Reflecting on the project website: What changes could be made to the project and/or the website to improve it? What are the features of the site that you think are most useful for teachers in schools? How could we make the site more useful for teachers in schools? What advice would you give to other students using the Music Teachers Oz website? Teachers? If you could make one statement, what would you say about Music Teachers Oz overall?








Appendix C:









Evaluation Questions Asked of Involved Teachers




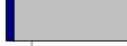


Question	Data gathered
Can you tell us how you came to be involved in the project?	Teacher's initial perspective of involvement and case study.
What were your initial thoughts when you saw your case study online, knowing that it would be accessed by pre-service teachers? Did your view change after the pre-service teachers accessed the site?	
What was your role to the pre-service teachers?	Teacher's perception of their role in project.
What were your initial thoughts about the project in regard to pre-service teacher learning? Have these thoughts changed 12 months on? What do pre-service teachers need to know about arts education?	Teacher's perception of pre-service teacher learning.
Did you read any of the pre-service teacher's responses to your problem? What were your initial thoughts when you read these solutions?	Teacher's perception of student's responses.
Overall, how have you changed after engaging with this project? <input type="checkbox"/> as a teacher? <input type="checkbox"/> As a teacher of pre-service teachers?	Teacher's reflection on overall involvement.
Knowing what you know now, would you undertake involvement with the project again? Why? Would you recommend other teachers to take part in this project? Why? What recommendations would you make for the project's future?	Teacher's ideas for future development of the project.



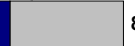




Appendix D:

Questionnaire Results

Semester 2, 2007; 1 and 2, 2008								
Section 1: These questions seek feedback concerning your learning.								
% Strongly disagree	% somewhat disagree	% disagree	% agree	% somewhat agree	% strongly agree	% disagree	% agree	m
Music Teachers Oz helped me see how general education theory applied to practical problems in music education.								
0.0	2.1	3.4	45.9	26.0	22.1	6		94 4.43
The case studies made me think about my own theories of learning.								
1.0	1.7	7.4	45.9	24.0	19.9	10		90 4.5
I began to see how music and the arts can be part of every child's school experience.								
0.7	1.4	1.7	34.2	24.4	37.6	4		96 4.9
Music Teachers Oz showed me how community groups can have an active role in school education.								
0.7	2.4	7.5	47.1	23.7	18.6	11		89 4.5
The relationship I formed with other students, teachers and lecturers will inform my future practice as a teacher.								
3.7	4.1	12.8	45.3	20.9	13.2	21		79 4.2
I believe I can be a good teacher of music.								
1.0	1.7	7.4	42.4	27.9	19.5	10		90 4.5
The idea of teaching music excites me.								
2.4	2.0	8.4	37.7	26.6	22.9	13		87 4.5

Section 2: These questions seek feedback concerning the learning strategies used on the website.								
% Strongly disagree	% somewhat disagree	% disagree	% agree	% somewhat agree	% strongly agree	% disagree	% agree	m
Music Teachers Oz modeled effective music education approaches for me to follow.								
0.3	4.4	9.4	56.2	21.5		14		86 4.2
The problem-based approach in Music Teachers Oz helped me to see real links between schools and my university studies.								
1.0	2.4	7.1	43.4	29.6	16.5	11		90 4.5
Using real-life problems increased my motivation to learn.								
0.7	2.4	8.1	43.6	26.7	18.6	11		89 4.5
Working with others on real-life problems helped me feel connected to other students.								
0.3	5.1	10.5	46.3	27.2	10.5	16		94 4.3
Working with others towards solving real-life problems helped improve the quality of my solutions.								
0.7	3.7	7.5	44.2	31.6	12.2	12		88 4.4
Engaging with multiple case studies highlighted the importance of understanding the learning context.								
1.4	3.0	7.8	47.3	27.7	12.8	6.4		93.6 4.4
The online discussion broke down communication barriers between students.								
1.4	6.4	11.8	48.6	26.0	5.7	12.9		87.1 4.1
The multi-university approach in Music Teacher Oz modeled effective collaboration.								
0.7	2.4	9.1	47.3	26.0	14.5	10.4		89.6 4.4

Section 3: These questions seek feedback concerning the design of the website.								
% Strongly disagree	% somewhat disagree	% disagree	% agree	% somewhat agree	% strongly agree	% disagree	% agree	m
The materials and activities structured around the Music Teachers Oz website have prepared me to teach music.								
2.7	6.1	9.2	48.1	27.5	6.4	18		82 4.1
The design of the Music Teachers Oz website is user friendly.								
3.1	3.4	9.8	47.1	19.3	17.3	16		84 4.3
The design of the discussion board is user friendly.								
1.0	3.7	7.1	49.8	22.0	16.3	12		88 4.4
I enjoyed the contact I had with practicing teachers in schools.								
1.7	2.4	5.8	55.8	23.6	10.6	10		90 4.3
I liked the design of the case studies.								
2.0	3.1	6.4	48.8	25.8	13.9	12		89 4.4
I enjoyed the choice of case studies.								
0.7	1.7	3.7	53.2	24.7	15.8	6		94 4.5

Section 4: These questions seek feedback about your perceptions of Music Teachers Oz.								
% Strongly disagree	% somewhat disagree	% disagree	% agree	% somewhat agree	% strongly agree	% disagree	% agree	m
Overall, I learnt a lot about music education in schools.								
1.4	4.4	7.1	51.0	19.6	16.6	13		4.3
Overall, I feel I have developed my approach to music education.								
2.4	2.7	7.4	44.9	26.7	15.9	13		4.4
Music Teachers Oz increased my understanding of how to teach music.								
1.4	4.1	8.8	45.9	27.2	12.6	14		4.3
I felt that the assessment associated with Music Teachers Oz helped for my learning.								
4.1	4.1	12.5	45.6	23.6	10.1	21		4.1
I felt supported by the teachers and lectures.								
3.4	3.4	11.8	45.6	21.3	14.5	19		4.2
The case studies will help me on future field experiences.								
1.7	2.4	8.1	48.0	26.4	13.5	9.7		4.4
I will use the website again when I begin teaching.								
4.1	4.1	9.1	44.3	21.6	16.9	17		4.3

Appendix E:

Members of the Reference Group

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