

*The Centre for Applied Theatre Research
Department of Drama
University of Manchester*

Performing Arts and the Wellcome Trust

*Report into the use of the performing arts in engaging
young people with issues related to biomedical science,
in order to inform a new young people's performing
arts initiative by the Wellcome Trust.*

September 2002

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1. Executive Summary

This report is the result of research, commissioned by the Wellcome Trust in May 2002, into recent and current performing arts practice that aims to engage young people in issues relating to biomedical science. The main purpose of the research was to inform the Trust in its establishment of a new funding initiative to further promote this area of work. A variety of research methods was employed, both quantitative and qualitative, including interviews, questionnaires, and a one-day seminar. The key findings are as follows:

- There is substantial interest in work that engages young people with issues around biomedical science, from theatre companies, science educators, schools, youth groups and others.
- Some work takes place in this field already, though there is a great variety in both methodology and standard.
- There is general agreement that the performing arts are an effective way of engaging young people with issues around biomedical science, though little consensus about the amount of scientific information that can be usefully conveyed this way.
- There is some confusion among practitioners as to what the Wellcome Trust might expect from projects and what biomedical science might entail, and any funding programme would need to make the Trust's expectations clear and transparent.
- A three tier system of funding is being recommended, with levels set at up to £3000, £10000, and £40000, allocated according to the style and purpose of the work undertaken .
- Design and length of application form should be appropriate to the level of grant, and forms should be as 'user friendly' as possible.
- Applications should be encouraged from a diverse range of organisations and individuals.
- Work that is experimental in nature should be encouraged. Likewise, the highest artistic standards appropriate to the work in question should also be encouraged, particularly (but not exclusively) for the Level 3 (large production) grants.
- Awards should be decided by a small panel, who would attempt to ensure a balance of work for and with young people, specific biomedical content, types of applicant and geographical spread.
- Applicants for small and medium grants should, where appropriate, be encouraged to apply for additional funding to develop their projects.
- Evaluation should be an integral part of the scheme, and should address both individual projects and the impact of the scheme as a whole.
- Responsive and formative evaluation is to be encouraged in addition to summative evaluation.
- Effective exploitation of the performing arts work is as important as the quality of the programmes themselves, and additional material such as workshops or web resources need to be fully resourced.
- The possibility of partnerships should be pursued with a variety of organisations such as ACE and regional offices, the arts councils for Scotland, Wales and Northern Ireland, NESTA, Science Year and the BA, particularly with a view to longer term planning and resourcing. Assistance of those organisations in promoting the scheme should also be sought.
- Long term funding and a strategic plan for performing arts work beyond the one year currently envisaged would help encourage more productive work in the future.

2. Research aims and objectives

Research aims:

- To assess recent and current practice in the live performing arts which engages young people in the biosciences or related subjects in order to inform future funding by The Wellcome Trust.

Research objectives:

- To collect data on relevant current or recent work conducted in the UK, in consultation with a number of other bodies (e.g. Regional Arts Boards, Arts Councils, and Association of Professional Theatre for Children and Young People.)
- To identify a series of models of practice defined by key aspects of performance or education methodology or context.
- To outline the key features of these models and make reference to significant innovations (artistic, educational and in reaching new audiences), any significant collaboration between individuals or organisations (e.g. between artists and scientists) as well as any other elements of good practice.
- To examine any evaluation undertaken of the work and its conclusions, including perceived demand for the work amongst target audiences and particular implications for other organisations/institutions.
- To make recommendations to the project manager and the advisory group set up by the Trust to aid the establishment of a new programme for funding work in this area.
- To provide indicative figures of the levels of funding required to support the range of models of practice.
- To contribute to the academic profile of this area of research into practice in contemporary performing arts.

A variety of research methodologies are being used to achieve these objectives.

3. Research Methodology

3.1 Research Team

The research team consists of the following individuals

Research Director: ANTHONY JACKSON.

Researcher: PAUL JOHNSON.

Part Time Research Assistants: SUSANNAH TRESILIAN
SIAN MORGAN

(It was decided that it was in practice a more efficient use of resources to increase the contribution of the part time research assistants rather than to appoint a part time secretarial assistant.)

CONSULTANTS.

Members of the CATR as appropriate – specifically JAMES THOMPSON (director of CATR) and JENNIE HUGHES (CATR research associate).

(Suitable people willing and able to act as paid consultants on the financial and medicine-in-society aspects of the research were not available within the time scale of the research and so were not appointed.)

A review of literature in the field has taken place to establish the level of prior performing arts work in this field and what documentation and analysis exists. The review has attempted to locate books, academic articles both web based and print based, and reports and evaluations. Because of the range of ways of working that might be relevant to this research, literature can come from the field of science communication, museum theatre, theatre in education, health education, and so on. Several science theatre practitioners and science communicators have mentioned the lack of a body of written work dealing with science theatre that can be referred to, and the literature review undertaken supported that.

Members of the research team have also attended the Cheltenham Science Festival and the BA (British Association for the Advancement of Science) Science Communication conference, both of which provided useful links and information; and the Science Museum of Minnesota (where theatre as an interpretative tool has been in use for 30 years).

One area that has been more closely examined has been evaluations of relevant pieces of work, both at the public domain and 'in-house' (some of which we have been asked to treat as confidential.) The evaluations examined were as follows:

'Enlightening or embarrassing?' An evaluation of drama in the Science Museum. (Sandra Bicknell and Xerxes Mazda, November 1993.)

'The Gift – Science Through the Arts.'
An independent evaluation.
(Sandra Bicknell. Circa 1996.)

'THE GIFT' A Qualitative Evaluation of The Gift.
(Wellcome Trust 2000.)

'Exhibitions Department Review – the 'science and art' field.'
(The Wellcome Trust March 2002.)

The Newman Experiment Catalyst Theatre (evaluation done by the company 2001)

Outer Space/Inner Space (NESTA/Exeter University 2001)

Pig in The Middle, Y Touring (Frances Abraham and Sandra Vegeris for the Tavistock Institute, June 2000.)

Report to the British Council – Shell-Chevening Scholarship in Science Communication (Bobby Cerini, July 2000)

Science on Stage and Screen, Wellcome Trust (Evaluation Associates 2002)

These various evaluations were examined to see what generic recommendations about performing arts practice could be drawn from them and what conclusions could be drawn as to the importance and most effective manner of conducting evaluations.

Due to the time span of the research only a limited number of pieces of work could be seen. This is because the summer is a traditional 'dark' period for theatre and many companies working with young people perform only in term time, so a number of video recordings of pieces were seen instead.

Live performances viewed included:

- Several Spectrum Gallery characters at the London Science Museum, including the Pregnant Men.
- Science on Stage performances at the Cheltenham Science festival.
- *No Place to Hide* (Science Line) at Tomorrow's World Roadshow.
- *CR7 - The Cancer Control Force* performed 6.15 Theatre Company funded by Cancer Research

- Big Brum's work-in-progress workshop on *Semmelweis* at Crescent Theatre, Birmingham.

Performances watched on video included

- Y Touring productions *The Gift*
- Y Touring production *Sweet as You Are*
- Wellcome *Creating a Debate for the New Millennium*
- Wellcome Trust *Dramatic Genetics*
- NESTA and Exeter University's *Inner Space/Outer Space*.

3.3 Questionnaire

A questionnaire has been devised and sent, with a covering letter, to nearly 200 organisations and individuals (see appendix B). These include theatres companies, theatre in education companies, science centres, museums and science education practitioners (see appendix C). The questionnaire has enabled the research team to identify the level, geographic spread and funding source of previous work in the field, as well as the perceived obstacles to undertaking this type of work. Where work appeared relevant and where possible the research team conducted a more in depth follow up interview (see below). Details of where to send the questionnaires were obtained from a variety of sources, including Theatre in Health Education Trust, Regional Art Boards, a variety of web based resources, and personal knowledge and contacts of the research team. Often practitioners would pass on details of the research to others who they knew had an interest in the area. There was further circulation of information regarding the research project on the APT and Science Year newsletters. There has been a certain amount of comparing information from similar sources to ensure a thorough coverage. The response level has been good, with 70 responses received by 1 September.

Two types of analysis have been carried out on the questionnaire returns: quantitative and an inductive content analysis. The quantitative analysis looks at, for example, the numbers of practitioners that have carried out this work, or the numbers of science centres that would be interested in carrying out this work while the content analysis looks at the reasons given for not carrying out work in this area or the perceived barriers. With the content analysis the categories for classifying the answers are drawn from the questionnaire responses, not imposed by the research team. (See 4.2 for findings.)

3.4 Interviews

Further to the national survey a number of interviews have been carried out with key practitioners, science communicators and administrators and funders. Some key practitioners were not interviewed separately because they gave key inputs at the seminar (see below.)

The interviews varied depending on the interviewee but included:

What the value of this type of work is, prior work in the area, what areas it was felt that funding could most usefully address, what levels of funding might be appropriate, what possible partnerships might take place, how could the scheme be best disseminated and targeted, how evaluation might more usefully be carried out.

Interviews were carried out with the following individuals:

Johnny Ball, currently touring the science musical *Tales of Blooming Science*.

Karen Bell, West Midlands Arts

Hugh Blackwood and Colin Brown, Drama teacher and Science/Citizenship teacher at Four Dwellings School, Birmingham.

Bobby Cerini, Programme Manager, Science Year

Bronac Ferran, Head of Collaborative Arts, Arts Council of England

Alison Gagen, West Midlands Arts

Paul Jepson, writer and director of Wellcome Trust funded *The Idiot*
Matthew Lenton, Artistic Director Vanishing Point Theatre and drama panel member of Scottish Arts Council
Kitty Parker, Education Officer Nottingham Playhouse and Roundabout
Brian Porter, Physico Theatre
Sally Rew, West Midlands Arts
Jessica Selous, Artistic Director Quantum Theatre
Paul Sutton, Artistic Director C+T
Garaint Thomas, Director Spectrum Theatre
James Tillard, Artistic Director 6:15 Theatre
Nigel Townsend, Artistic Director Y Touring

3.5 Seminar

A one day seminar was arranged for Saturday 13 July, with a number of science theatre and theatre in education practitioners attending. The seminar addressed the particular practice of engaging young people with issues in science as well as the applicability of ways of working drawn from other areas (see appendix D.) There were a number of inputs from participants such as Steve Mesure of Floating Point, John McGrath of Contact Theatre, Dominic Dickson of Liverpool University Physics Department and Rachel Cooper from Bradford University's School of Interdisciplinary Human Studies, as well as extensive and often heated discussion of the issues arising. Both the participants and the research team felt that the seminar was an extremely valuable occasion, with one participant commenting that it was the only event of its kind that he was aware of in his 15 years of working in this field.

The following attended the seminar:

*Claudette Bryanston	Science Centre Stage
Ada Chan	Department of Drama, University of Manchester
*Rachel Cooper	School of Interdisciplinary Human Studies, University of Bradford
*Dr Dominic Dickson	Department of Physics, University of Liverpool
Maria Gee	Big Brum Theatre in Education
*Rebecca Gould	Science Centre Stage
Melanie Klyne	Spectrum Theatre Co
*John McGrath	Contact Theatre
Jon Marshall	Magic Carpet
*Steve Mesure	Floating Point/Creative Science Consultancy
Tony Jackson	Department of Drama, University of Manchester
Paul Johnson	Department of Drama, University of Manchester
*Simon Parry	Wellcome Trust
Brian Porter	Physico Theatre
Ian Smith	The Play House
Paul Sutton	C+T
Dorothy Wood	M6

* Indicates a formal input during a seminar session.

3.6 Wellcome Trust Advisory Panel

Both the interim and the final reports were presented to and debated at the July 15th and September 18th meetings of this panel of experts in the fields of the arts and media in education and in public understanding of science. The valuable comments made at those meetings are reflected in this revised edition of the final report.

The findings from each of the various avenues of research are presented in the way they emerged from that research methodology, for example grouped according to response to a particular question or particular theme emerging from evaluations.

The findings that appear to be most significant, or that are found across a range of evidence are summarised here as follows:

Experimentation

- There is little consistency in standards of work, and work of high artistic standard needs to be encouraged.
- Many organisations and individuals would be interested in working in this area but are deterred by lack of funding or difficulty in obtaining funding, in particular the length of time required to apply for funding.
- There was the preconception that performing arts work funded by Wellcome would have to follow a rigid agenda that would result in ‘a contrived piece about science’.
- It is important to encourage experimentation with the types of performing arts work used, and some element of a ‘right to fail’ might help this.

Evaluation

- Evaluation is important and needs to be an integral part of any project.
- Evaluation can be imaginative, and needs to reflect and respond to the nature of individual projects.
- The appropriateness of project aims needs to be considered along side how well objectives have been met.
- An awareness of the relationship of the project to the broader context needs to be considered, as well as the impact of the whole programme.

Utilisation

- The relationship between different parties (such as the theatre company, Wellcome Trust and school) is crucial.
- It is important that work is either well targeted or addresses all of those who may access it.
- A good understanding of audience needs help increase the efficacy of the work.
- Additional activities, such as workshops or debates, and materials, such as resource packs, have great potential but are often poorly resourced and ineffective.
- Training and an awareness of and response to prior evaluation is vital to help raise standards of work.
- Cross-curricula work can be very exciting but needs more support than work targeting one subject.
- Long term funding and a strategic plan would help encourage more productive work.

4.1 Literature Review and Evaluations

There is very little literature that directly addresses performing arts work that engages young people with issues in biomedical science. The opportunity exists for more research and writing, for wider dissemination and for some form of central archive to be established. The evaluations that were considered were mainly commissioned by funding bodies and carried out by external companies, though some were carried out by the companies themselves. Some are published and in the public domain though others are internal or even confidential.

The various evaluations considered revealed the following general points:

- The majority of evaluations contained both qualitative and quantitative elements, though there was a tendency to give greater emphasis to the quantitative elements.
- The evaluations used a variety of techniques, including questionnaires; observation of performances; interviews with teachers, performers, and young people; follow up work carried out

- The evaluations tended to focus on how closely individual projects met their aims and objectives, and most showed little evidence of a broader contextual awareness or made little attempt to extrapolate larger conclusions from their findings.
- Quantitative research often produced limited findings, with no opportunity to discover *why* particular answers were given.
- There was little investigation into how *appropriate* the aims and objectives of individual projects were alongside how well they were met.
- The evaluations were, on the whole, extremely supportive of the use of performing arts in engaging young people with issues around science and biomedical science. There was the repeated suggestion that the performing arts were an effective pedagogic tool, though often there was a disparity in the outcomes between high attaining and low attaining schools and pupils, suggesting that one approach might not be suitable for all.
- The relationship between the different parties (theatre company, funding body, schools, etc.) involved in a production was seen as crucial. Some felt that compulsory preview sessions were needed for teachers to ensure that student gained the highest possible benefit (The Newman Project).
- Evaluation needs to be commissioned concurrently with the performing arts work, and a range of evaluation suits different types of work.
- Some broader studies commented on the ‘prevalence of poor quality work that weakened the field’ (Exhibitions Dept Review) and that ‘there seems to be little evidence of sound production processes or performance standards being developed across the science communication industry, with the exception being for science theatre initiatives which tend to follow professional entertainment processes.’ (Report to the British Council)

The detailed findings from the evaluations considered have been divided into five areas:

1. Young people: the responses and impact of these programmes on young people. Young people were the focus of the majority of the evaluations and their input and feedback offers essential insights into the projects undertaken in this field.
2. Funding: particular areas that require more funding or extension. Also any recommendations for a model of funding and particular areas of need and importance.
3. Marketing and distribution: noted as an important area for consideration and incorporates issues of audience and context awareness.
4. Evaluation: the different evaluative and data collection methods used in the evaluations and any flaws identified in the use of these methods and the data is used and applied.
5. The future of ‘science-theatre’: recommendations that refer to the future of this work and any areas that need to be considered for the projects, evaluation and development.

1. Young people.

SUMMARY:

The key to working with young people is research to establish an understanding of the target audience of the company or programme. This may require increased funding earlier in the process or work.

- Some of the evaluations expressed concern about the content of their programmes and the fact that occasionally it excluded some students who were ‘lower achievers’ (Outer Space/Inner Space 2001) and ‘low attaining’ schools (Cracked 1999).
- This former point was also mentioned in reference to marketing the product and being aware of the attainment level of the school and the importance of mentioning the ‘recommended target audience’ (Outer Space/Inner Space 2001) in the promotion of the product.
- A thorough understanding of the audience and their needs was highlighted as an essential part of the preparation for projects. It was suggested in one particular evaluation (Outer Space/Inner Space 2001) that evaluations needed to be funded much earlier in the development process to enable the company to understand and research their target audience.
- For an audience it is important that the programmes focus on ‘inclusivity’ and ‘accessibility’ (Enlightening or embarrassing? 1993)

particular evaluation made several recommendations to improve this aspect through a stronger structure and narrative thread and an attempt to connect the play and workshop situation to 'external realities' (Cracked 1999). It was also recommended that a specific criterion be established to evaluate the debates and set aims and objectives.

2. Funding.

SUMMARY:

Funding is important to allow projects to reach a wider audience and be considerably more audience-specific in the content of the programme the offer schools etc.

- One evaluation recommended that there should be a budget for 'training time' (Enlightening or embarrassing? 1993) for the company preparing the project.
- It was suggested that more funding was needed so a broader audience could be accessed.
- It was requested that funding should be available earlier in the development process to allow research and study into the target audience, the teachers and the national curriculum.
- It is also important that there are enough grants to give all members of the collaborative team fair remuneration.
- There need to be 'larger and more long-term funding mechanisms' (Exhibitions Department 2002).

3. Marketing and distribution.

SUMMARY:

Marketing and distribution is key to the success of any projects and they require thorough thought and consideration based on research.

- This was an important aspect for most of the evaluations and many evaluations commented that this was an area that needed increased consideration.
- Working with established companies and/or playwrights helps in marketing projects (Science on Stage and Screen 2002)
- Marketing needs to be more specific about the details in the project offered to school particularly in reference to 'scientific coverage of the play' (Outer Space/Inner Space 2001).
- There needs to be a committed programme of advertising.
- Some evaluations mentioned that the majority of teachers making contact or organising the event were in the science or biology departments. This relates to the need to expand the availability and accessibility of programmes and appeal to a wider 'range of faculties' (The Gift 2000).
- The above issue is also connected to the problem of sharing the resources with a variety of departments in school and exploiting the potential of the material.
- Many evaluations recommend that companies work in conjunction with local organisations to promote the products. However, one evaluation warns that this needs to be considered carefully and thoroughly.

4. Evaluation.

SUMMARY:

Evaluation had been overlooked and needs to be given more priority and significance.

- Evaluation requires greater emphasis.
- Evaluation needs to be considered earlier in the process.
- An 'ongoing assessment of performances' (Enlightening or embarrassing? 1993) needs to be established including new performances.
- There needs to be a 'total audience interaction with the drama' (Enlightening or embarrassing? 1993) analysis and this will require long-term audience data to be gathered.
- The potential for other forms of evaluative methods (including behavioural scatter grams) needs to be investigated.
- Many evaluations mention the importance of context and that this must be considered in the evaluation of the work.
- Criteria need to be set for certain aspects of the work to ascertain how they should be evaluated

SUMMARY:

This work undoubtedly has a future, but it requires a more structured and consistent approach to evaluation and the process as well as the product if it is to reach its full potential.

- There needs to be a strategic plan for the development of drama, covering long and short-term intentions and aims.
- The evaluations detail the positive reception of the work and indicate that there is definitely a future for work of this type.
- One particular evaluation believed that combining art and science had increased the public's interest in both disciplines.
- A set of goals for the use of drama needs to be established.
- Production structures need careful consideration so the quality of the work is not reduced.

4.2 Questionnaires

Some general comments:

- Seventy responses were received, though many companies who were interviewed or contributed to the seminar did not complete a questionnaire.
- Thirty-nine responses were from theatre organisations, twenty-two were from science centres, nine were from museums and five were "other" (including Nottingham City Council, National Network for Arts in Health and Edinburgh International Science Festival.)
- Of the thirty-nine theatre companies, four specifically mention theatre in education and twenty-two work with or for young people.
- Not all respondents answered all questions or parts of questions, so occasionally the totals may appear less than the number of responses.

Main conclusions:

- The majority of respondents had not done any work in this area.
- Funding was the principal deterrent or issue that prevented companies producing work that addresses the impact of science on society.
- Concerns raised about funding included uncertainty about funding opportunities or sources, the time and effort involved in applying for funding, the restrictions attached to any funding received and fulfilling any particular funding requirements.
- The majority of organisations were interested in future work in this field.
- A small proportion of organisations mentioned work that is currently ongoing.

Question 1: In the last five years have you produced or commissioned live performing arts work with or for young people that in any way engages with the impact of advances in scientific research on society?

(20 responses)

- Twenty of the sixty-seven responses said that they had produced or commissioned live performing arts work with or for young people that in some way engages with the impact of advances in scientific research on society.

Question 2: Could you please give details of this work?

(20 responses)

- Of the respondents ten were theatre companies, four were museums and two were science centres.
- Eleven of the productions had taken place in England, four of those in London. Four had taken place in Scotland and two in Wales.
- Seven of the productions had occurred in schools and eight in museums and science centres.
- Half of the performances had been for young people between the ages of ten and sixteen.
- One production had been specifically for primary school children.
- Two productions had been for young adults of sixteen and over.
- Seventeen of the twenty organisations had carried out evaluations.

Biomedical science

1. *The social and ethical issues arising from developments in biomedical science.*
2. *Genetics (explored by two companies).*
3. *Inheritance of red hair, developed in collaboration with MRC and human Genetics Unit.*
4. *Cells, organelles and DNA.*
5. *Ethics and morality of scientific endeavour.*
6. *DNA.*
7. *The brain.*

Astronomy and space science

8. *Astronomy.*
9. *Developments in astronomy.*
10. *Astronomy astro-physics.*
11. *Space flight.*

Physics and maths

12. *Music and physics.*
13. *Magnetism, light, electricity, physics.*
14. *Science and technology in Victorian times.*
15. *Maths, gravity.*

Health related issues

16. *Drug and alcohol education.*
17. *Lifestyles, new research and treatment, recruitment and training, info and fundraising. (Re: cancer).*
18. *Healthy eating/organic agriculture.*

General science

19. *Scientific advancements and related ethical issues.*
20. *General.*
21. *Various.*
22. *New Media.*

Question 3: In the last five years have you been interested in producing work that addresses the impact of science on society?

(34 responses)

- Thirty-four of the sixty-seven responses **had** expressed an interest in producing work that addresses the impact of science on society in the last five years.
- Of those who were interested 61% were theatre companies and 24% were science centres.

Question 4: What has stopped you from undertaking this work?

(37 responses)

- The answers ranged from a lack of funding and resources to other priorities and commitments that prevented the organisations from producing work, in the last five years, that address the impact of science on society.
- Twenty responses mentioned that funding was a problem.
- Of these, half were theatre companies and one fifth were science centres.
- Of these twenty comments, 70% gave funding as the sole reason for not undertaking this work.
- The other 30% gave other reasons such as lack of time and the problem of collaboration that prevented them undertaking this work. One company noted a 'lack of scientific collaborators/partners'.

Question 5: Would you be interested in producing work that addresses the impact of science on society

- Forty-six of sixty-seven responses said ‘yes’ they would be interested in producing work that addresses the impact of science on society in the future.
- Of this forty-six, 63% were theatre companies and 22% were science centres.
- Museums and TIE companies made up 6% each, of these responses.

Question 6: What might prevent you from attempting to seek funding for this work?

(23 responses)

- Only twenty-three of the forty-six questionnaires that responded to question 5 gave an answer to this question
- Of the twenty-three answers lack of funding, time, lack of audience demand for this type of work, difficulty marketing the product, other priorities and a lack of knowledge were mentioned as reasons that would prevent them from undertaking this work in the future.
- Fourteen responses mentioned lack of funding as a preventative. Three of the responses specifically mentioned a ‘lack of knowledge of funding options’. One response noted the ‘specific requirements of funding schemes’.
- Of that fourteen six were theatre and five were science centres.
- Eight respondents mentioned that a lack of time was a preventative.
- Of those eight, half were theatre companies.
- Eight responses explained that nothing prevented them doing this type of work.
- Of those eight, four were theatre companies, two were museums, and one a TIE company and one a science centre.
- Of these eight, four currently have work ongoing and the other four mentioned that a lack of funding was the only problem.
- Four theatre companies mentioned that it might be difficult to market and sell a programme of this nature. One response mentioned that this type of work ‘doesn’t reach attainment targets on the National Curriculum’.

Question 7: What are the main reasons that deter you from undertaking this type of work?

(38 responses)

- Twenty-nine questionnaires did not give a reason that deterred them from undertaking this type of work.
- Twelve companies explained that it was not their area of work/interest.
- Of those twelve, half were theatre companies.
- Eight responses mentioned funding as a deterrent, three-quarters of which were from theatre companies. One company that focuses specifically on scientific issues mentioned the lack of ‘EASY access to funding’ was a problem.
- Six questionnaires commented that there were no deterrents. Of these three were theatre companies, two museums and one science centre.
- A lack of knowledge and experience was noted as a deterrent by four organisations. Two of these were science centres and two were theatre companies (although the theatre company mentioned a ‘specialised knowledge’). One company commented that ‘scientifically advanced shows require extra research and script development’.
- Two theatre companies thought there is a lack of demand for this type of work.
- One TIE company and one theatre company mentioned that the agenda/criteria of potential funders would act as a deterrent. The latter commented that ‘research-based funders tend to want their point of view presented as “right”’ and the company preferred ‘opening a discussion’ to ‘presenting a one-sided argument’.
- One company commented that ‘writing a contrived piece about science is a difficult task if you want it to be a piece of TIE’.

Question 8: Would you consider the Wellcome Trust as a possible source of arts funding?

(62 responses)

- Forty-three gave an unequivocal ‘yes’.
- Of the forty-three responses, twenty were theatre companies, thirteen were science centres,

also wouldn't want to "fit" our work to the funding'. A second mentioned that 'we would have to build a period for research and development into any work we were interested in creating'. A final comment explained that 'it would depend on the idea and whether the trust would consider funding it'.

- Four questionnaires gave no response.
- One explained that it was not their area of work.
- One protested 'been theatre-tried it-failed! Noone is interested in Primary School Science which is specifically involved with 'Formal Education' and we're not trendy enough for Arts Grants either!'

4.3 Interviews

A number of general points have been drawn out of the various interviews conducted by the research team.

- Performing Arts were seen as an effective and valuable way of raising issues surrounding developments in bio-medical science with young people.
- Additional materials, such as web resources or teachers' packs, to exploit the work are seen as very important.
- Encouragement of experimentation and the 'right to fail' are crucial for raising the level of performing arts work.
- Establishment of explicit, clear criteria by which to assess the work is seen as a significant contributory factor in the success of the scheme.
- A potential conflict is seen between developing new work and maintaining existing relationships (e.g with companies already funded).

Theatre makers raised the following points.

- Worry that one off funding that does not support long term development
- A perceived pressure to fit your artistic ideas into a pre-existing criteria to obtain funding, and these criteria might not encourage the best standard of work.
- Worry that the bulk of funding will be concentrated in London and that the regions were 'at risk.'
- Difficulties in delivering work when teachers have no experience or training in exploiting the work.
- Pressure to produce new work cause tendency to reinvent wheel.
- Respect for expertise of partners is of crucial importance.
- Useful to generate income as well as rely on grants.

Representatives of funding bodies raised the following points.

- The ephemeral nature of the work results in problems of long term development.
- The development of other resources to enable to continue working would result in greater breadth of impact.
- Collaboration also increases impact of scheme.
- It is as important to target science clubs and science centres as theatre companies.
- There is an important role for the Wellcome Trust in bringing artists and scientists together.
- Evaluation has a significant role to play, and should be an integral part of any funding.

Teachers raised the following points.

- Some felt that work had to directly address the curriculum, but other felt that this was less important.
- Cross-curricula work is seen as very important and exciting, but is difficult to put into place.

- Resource packs are problematic because often there is insufficient time to read them.
- ‘Modular’ work (performance, workshop, pack, video, etc.) where schools can buy into more or less of the work is seen as a good thing.
- Cost is an important factor – expensive material would be off putting.
- Schools might be interested in applying for funding directly.

4.4 Case Studies and Models of Practice

Due to the large number of models developed it has been decided not make extensive use of case studies, but rather to illustrate the models with references to a number of different pieces of performing arts work. All of these models of work have been found to be effective in different ways, and they are not given in any value order.

The models include:

- The *Traditional T.I.E. model*, for a targeted age-range with a performance and associated activities either run by the company as a workshop or through a teacher’s pack. The level of additional material can vary greatly, for example with Big Brum’s *Semmelweis* project planned to run as a whole day event of which the performance is planned to last between one and two hours. The associated work is seen by many as being of similar importance to the performance itself, especially with regards to the educational impact of the piece. The performance can take place in the school or in a different space, such as a theatre or museum.
- The *T.I.E.-Residency model*, where a T.I.E. performance is given at a school, followed by a series of workshops with T.I.E. actor-teachers in school over a period of weeks. This process leads to a showcase event for the whole school (parents, teachers as well as pupils) at which the original play is performed followed by pupil-groups own presentations, based on the theme. [E.g. M6 Theatre’s programmes on bullying and car-crime].
- The *Gallery Character model*, ranging from unscripted though researched interaction of casual museum or science centre visitors with a character in role to highly scripted and rehearsed performance at specified time in a gallery space. The character could be historical, such as Charles Darwin, or fictional, such as one of the Pregnant Men at the Science Museum. [E.g. a number of Spectrum Theatre’s many characters]
- The *Investigative model*, where the participants are set some form of investigative task, though not required to perform in role. [E.g. Science Line’s *No Place to Hide*.] A further version of this is with the participants placed more strongly in role, and required to interact with others as characters themselves. [E.g. Vanishing Point’s *Brief History of Time* education workshop.]
- The *Youth Theatre model*, with performances by young people on themes relating to biomedical science. There can be a varying emphasis on process or product. [E.g. Wellcome’s Science Centre Stage and Cheltenham Science Festival Science on Stage.]
- The *New Technology model*, where performance work is produced through an engagement with new technologies (N.B. not necessarily using new technologies in performance). [E.g. C+T Livingnewspaper.net project where the Internet is used to put information to provoke young people performing arts work, which is then documented in a variety of ways and also stored on the web site, providing a stimulus for more performance work.]
- The *Children’s Theatre model*, where children’s theatre is used to put across a scientific message or information, generally targeted at school groups. This model is perhaps closest to the lecture/demonstration at Science centres and museums, as scientific content is explicitly being taught [E.g. Johnny Ball’s science musical *Tales of Blooming Science*.]
- The *Artistic Interpretation model*, where the science/scientific issues are used to initiate performance work, rather than engaging with it directly. This can combine with a number of the other models. [E.g. TAG’s *Dr Faustus* or Reckless Sleepers’ work, or ‘science plays’ such as Frayn’s *Copenhagen* or Stoppard’s *Arcadia* and *Hapgood*.]

There is a level of crossover between these categories, and the list is intended to be indicative rather than comprehensive.

The following were the key findings from the one-day seminar.

- Participants had a variety of motivations for using performing arts: - delivery of science content, encouraging young people to study science, to have better informed participants in democratic society, to discuss issues with little concern for detailed or accurate science content.
- A number of binary oppositions emerged, upon which work could exist at any point on a spectrum. These include:

Knowledge based	Issue based
Performance based	Participation based
Product based	Process based
Education centred	Aesthetic centred
- It was important to recognise why the performing arts were being used, and what the motivation for using them was.
- It was recognised that the generation of *debate* about biomedical issues should be at the heart of the work produced - debate within the performance and/or provoked by it.
- It was further agreed that practitioners involved also needed to engage with these debates at their own level: that the dilemmas produced by developments in biomedical science were both complex and, at root, similar to philosophic dilemmas faced by societies across history. While some awareness of their scientific basis was required, more important was the recognition that these dilemmas were real, immediate and relevant to everyone.
- The most successful work had a productive relationship between form and content.
- The notion of experiment was developed as a useful link between science and arts. Practitioners were sometimes thought to ‘play it safe’ with form when handling content that they were unsure of. It was seen as important to encourage work that set out to ask questions not just meet pre-determined outcomes.
- An overarching model of funding was presented:

Present hypothesis (funding proposal, requiring rigour)
Offer experiment (performing arts work with young people)
Result (evaluation of work)
Reproducibility
- The idea of 3 levels of funding, and idea grant, a development grant and a production grant was also discussed and met with broad approval.
- A funding scheme that allows for work across different models of practice was seen as desirable. Targeting funds at specific categories of work, e.g., youth theatre or large-scale productions, was seen as unnecessarily restrictive.
- A scheme that that was process driven rather than product orientated was seen as desirable.
- The use of brokering agencies was discussed at length, though no clear consensus was reached. The experience of participants with brokering agencies was mixed, and no one body was though appropriate for the range of work that the Wellcome Trust might be funding. It was though that if the right brokering agent were found then it would be a useful way of proceeding. Co-funding was also discussed, though the consensus appeared to be that this was obstructive. Creative partnerships were also discussed, and were more positively received.
- It was seen as important that the Wellcome Trust funded a number of schemes, encouraging a plurality of work in terms of location, content, form, profile, participation, level of risk.
- The opportunity to for some artists to work with the Trust over a period of time was seen as important, as was the opportunity to develop productive partnerships between scientists and artists.
- Many participants felt that it is very important that there was some body of science theatre practitioners that could offer support and links, though obviously that was beyond the remit of the Wellcome Trust.

4.6 Models of funding and possible partnerships

4.6.1 Models of funding

3 level funding

This has been the most well received funding model, with support from theatre practitioners, science communicators and arts funders, and this is the one recommended by the research team. Two possible breakdowns of the three levels of funding could be as follows:

Level 1 Research Grants	10 grants @	up to £3k	
Level 2 Development Grants	6 grants @	up to £10k	
Level 3 Production Grants	4 grants @	up to £40k	Total up to £250k
Level 1 Research Grants	22 grants @	up to £3k	
Level 2 Development Grants	10 grants @	up to £10k	
Level 3 Production Grants	2 grants @	up to £40k	Total up to £246k

Depending on the levels of grants given (e.g. at level 1 some grants of £1k may be given as well as others of £3k), the total funding could range greatly. The ratio of awards at each level could be altered, with small grants being perhaps more suited to encouraging research, youth and community work or work in individual schools. There was support for these financial levels of funding from practitioners and those with experience of running arts funding schemes.

It was strongly recommended – and agreed – at the Advisory Panel meeting on 18th September that all three levels of funding should be advertised as such but that the numbers of awards at each level should not be specified in order to retain maximum flexibility in responding to the actual applications received. The research team fully endorses this recommendation.

There might be an encouragement, and there would certainly be a possibility, for work to progress through the three levels, and one of the outcomes of each level would be an evaluation that could form part of the application for the next level of funding. All the funding could come on stream at one time, or the funding could be staggered with 3 months between each funding level.

Experimentation would also be encouraged, possibly through the ‘experiment’ model discussed at the one-day seminar that is seen as a useful way of developing the links between art and science.

The different levels of funding would also be suitable for funding a range of work, and not all would necessarily require a performance outcome.

Examples of work at the Level 1 grant might include research time for a writer, leading through to what would be the commissioning stage of the project, or for a school group to produce a play or workshop and tour it to local schools.

Examples of work at the Level 2 grant might include assembling a creative team and work a piece up to a work in progress showing to an invited audience, or to develop and run targeted education workshops associated with a pre-existing piece of performing arts work.

Level 3 funding would be for full productions, or for touring productions which are funded from elsewhere.

There are, however, some drawbacks with this particular funding scheme that require further consideration. The scheme might be difficult to set up in the time allowed, and might prove to be unnecessarily bureaucratic if it were to run once only. The time taken to award the grants could also prove problematic, particularly if a staggered award model were used. The potential time scale for the scheme is launch in late October 2002, deadline for applications at the end of February 2003 and all money committed by September 2003. It was agreed at the Advisory Panel meeting on 18 September that the ‘staggered’ option would not be feasible within the given timescale. It should however be re-considered were the Trust able to guarantee the continuation of the scheme beyond September 2003.

Open funding

One further scheme that was discussed with practitioners and administrators was of open funding. This might reduce the amount of bureaucracy, as an open fund would be publicised where companies could bid for money to support whatever project they were interested in carrying out.

Selection criteria would have to be rigorously applied and companies selected on a basis of how closely they meet each project meets its own aims and objectives. This would perhaps lack focus and might be harder to provide selection criteria as the range of work could be so broad.

Focused Development

Companies with an existing track record in this area whom the Wellcome Trust see as having clear potential for future development would be targeted and asked to tender for substantial sums to support a range of work over a three year period. It would, however, be difficult to suggest which companies would be most suitable for targeting without a more detailed strategic plan for developing performing arts work, and what the Trust would like this work to do, and how the Trust would like it to develop.

Whichever scheme were to be adopted, it would in the team's view be vital to establish a small panel to scrutinise applications, make recommendations on which applicants should receive awards and at which level, and monitor the progress of the scheme. While there might be some advantages in appointing an outside organisation to 'broker' the scheme, once again the timescale does not realistically allow for this. Established by the Trust, the panel should have demonstrable expertise in the areas of performing arts, education and the public understanding of science.

4.6.2 Possible partnerships

A number of discussions have been held with various organisations as to the possibility of partnerships of various degrees in the running of the scheme. The most fruitful of these partnerships are detailed below.

Arts Council of England and Regional Offices

Preliminary discussions have been held with Bronac Ferran, head of Collaborative Arts at ACE into a possible contribution towards the Wellcome Trust Performing Arts scheme. Collaborative Arts have responsibility for all arts/science work in ACE, and are keen to increase the level of work they do with young people and the amount of education work that they do. The collaboration could function on a number of levels, ranging from ACE merely publicising the scheme to perhaps co-running any later phases of the scheme that may be approved, with companies applying to ACE for additional 'top-up' funding. The potential exists for extending the scheme to the Scottish, Welsh and Northern Irish Arts Councils but different structures exist and the scheme would need to be renegotiated. Promotion of the scheme could also be done in conjunction with Drama and Dance at ACE, and with the regional offices providing valuable local dissemination and support of potential applicants. Many of the Regional offices of the Arts Council have a good track record in creating user friendly application forms, and would be a source of advice when designing the application procedure.

Science Year/Planet Science

Planet Science (previously Science Year) focuses on raising awareness of science in those aged between 10 - 19 through a broad range of activities, and is funded by the Department for Education and Skills with additional support from the National Endowment for Science, Technology and the Arts (NESTA). Planet Science would be keen to have an involvement in the scheme, as they have now been given funding for a further year. Discussions with the research team have taken place but could not be progressed given that the organisation is undergoing major restructuring, due for completion mid-September 02, and any work they do after this will have to fit within the new aims, as yet undecided, of the programme.

NESTA was formed in 1998 to support and promote talent, innovation and creativity in the fields of science, technology and the arts. Its broad directions were to:

- o help talented individuals, or groups of individuals, in the fields of science, technology and the arts to achieve their potential;
- o help people to turn inventions or ideas in the fields of science, technology and the arts into products or services - which can be effectively exploited and the rights to which can be adequately protected;
- o contribute to public knowledge and appreciation of science, technology and the arts.

As NESTA works to its own particular aims and objectives which do not match closely with the aims of the Wellcome Trust scheme it has therefore not been considered as a co-funder though it could be considered as a means of publicising the scheme. The Science and Engineering Ambassadors scheme could also be used as a means of linking scientist with artists for collaborative works.

5. Conclusions

5.1 Recommendations

The research team makes the following recommendations:

1. A three level funding scheme should be adopted, with all three levels of grants coming on stream simultaneously. In future a staggered introduction might be preferable but the time scale of the funding (see end 4.6.1) means that is not possible for the current scheme.
2. To encourage applications from a wide range of organisations and individuals each level of funding should have its own ‘user friendly’ application form that is appropriate in length and complexity for that level of funding. Consultation with ACE and regional offices will aid in the development of these forms.
3. A large number of Level 1 and 2 grants should be awarded to encourage experimentation with the expectation that some of these projects could go on to receive further funding, either from the Wellcome Trust or elsewhere. Likewise, the highest artistic standards appropriate to the work in question should be encouraged, particularly (but not exclusively) for the Level 3 (large production) grants.
4. The Wellcome Trust should attempt to develop a longer-term strategy (i.e. beyond the one year of operation currently envisaged) for their performing arts work, and this would be beneficial for all of those involved in work in this area.
5. A small panel should be set up by the Wellcome Trust to assess the applications, and the scheme as a whole should include a range of subject matter, form, and diversity of participants and performers. (See criteria below.)
6. Partnerships at some level should be developed with Collaborative Arts at the Arts Council of England, with the Scottish Northern Irish and Welsh Arts Councils and with the regional offices of the ACE. Initially, these will be most productively linked to promotion and support of the scheme at local levels. Both UK wide and regional elements are seen as having particular importance.
7. Further partnerships should be explored with organisations such as NESTA, the BA and Science Line, in order to promote the scheme and the projects funded within the scheme, and as sources of potential scientific collaborators.
8. Evaluation should be integral to the scheme. There should be an evaluation of the scheme as a whole, and appropriate and effective evaluation should be built into each project
9. Evaluation of individual projects should be formative and responsive as well as summative and imaginative evaluation that directly engages with the style of the project is to be encouraged.

5.2 Criteria for selection of work

The following criteria are suggested to aid in the selection of work. The criteria should be transparent and made available to potential applicants at the promotion stage.

1. Does the project address, directly or indirectly, the brief set by the Wellcome Trust, including relationship to biomedical science and work with or for young people?
2. Is the project designed to generate and encourage debate among its audience or participants?
3. Does the application reflect an active engagement with issues in biomedical science and/or their representations among the practitioners involved?
4. Does it articulate clear and achievable goals or outcomes, either in product or process?
5. Does it demonstrate how these goals will be reached, for example through access to scientific collaboration?
6. Does it have in place the appropriate procedures for effective management of the project (financial, organisational and artistic)?
7. Is effective and appropriate evaluation built into the project?
8. Does it show an understanding of the importance of both educational and artistic dimensions?
9. What track record does the applicant have (e.g. in educational theatre or science education)?
10. What would the potential impact of the project be in terms of participants, direct audience or wider

APPENDICES

A Research Proposal

*The Centre for Applied Theatre Research
Department of Drama
University of Manchester*

A proposal for a research study into the use of the performing arts in engaging young people with issues related to biomedical science, in order to inform a new young people's performing arts initiative by the Wellcome Trust.

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- Appendix: Current and recent research undertaken at CATR

1. Applicant Organisation

The Centre for Applied Theatre Research (CATR)
Department of Drama
The University of Manchester
Oxford Road
Manchester M13 9PL

Tel: 0161 275 3356. Fax: 0161-275 3349.
E-mail: a.r.jackson@man.ac.uk or paul.johnson@man.ac.uk

The Department of Drama

The Department of Drama is one of the longest-established such departments in the country, and is a constituent department within the School of Music & Drama. With an international reputation in the fields of theatre history, 'applied theatre' and, more recently, screen studies, it aims to provide an academic study of theatre and drama on screen based on theatrical and film history, study of play texts, dramatic theory and practical performance and project work. Postgraduate programmes include the taught MA degrees in Applied Theatre and Drama & Theatre Studies and the interdisciplinary MA in Screen Studies administered by Drama, together with the vocationally-oriented Diploma in Drama and the research degrees of M.Phil. and PhD.

schools, prisons and museums) and/or with marginalised communities, and particularly those activities which engage directly with areas of social, educational and cultural policy. Current projects include the research, development and piloting of evaluations of applied theatre, AHRB-funded research into the effectiveness of theatre as an educational tool within museums, and a DfID-funded development of a 'Resource for Theatre, Participation and Development' in Brazil. See Appendix for details of current and recent research. The Centre does therefore has a proven track record in conducting, and delivering, research in the area of concern to the Wellcome Trust. Directors of CATR are: Professor Viv Gardner, James Thompson and Anthony Jackson.

Note. This proposal is made in response to the invitation issued by the Wellcome Trust on 22nd March 2002 as part of its Medicine in Society Programme. Given the short turnaround time available for preparation of this proposal, the enclosed represents, as agreed with the Project Manager, an indicative rather than a final outline of the scope, methodology and costings of the research. Some modifications may prove necessary at a later stage.

2. Summary of Research Proposal

2.1 A variety of live performance work exists which engages young people in the biosciences or related subjects, including work by and for young people, in a variety of educational and performance contexts. There is however little widely available research that assesses the mode, extent, and impact of this work.

2.2 The proposed research will be based within the CATR and will consist of three main interrelated areas:

- a summary of relevant recent performing arts activities undertaken in the UK
- an identification and analysis of key models of practice through a number of case studies and
- recommendations for future practice.

2.3 The research project will run for a four-month period from 7 May to 7 September 2002, with an interim report delivered by 25 July. A final report suitable for a broad readership will be delivered to the Trust before completion of the project.

2.4 The research will broadly follow the Trust's proposal but, given the limited timescale, with the following exceptions:

- data collected on current or recent work undertaken in the UK will be indicative rather than completely comprehensive.
- investigation into levels of demand will take place using pre-existing data rather than by generating substantial new data.
- a one day seminar for invited practitioners is proposed to share good practice and evaluate interim findings and recommendations.

2.5 An already identified researcher, available to begin at short notice, will be appointed to undertake the day-to-day research. With the exception of part time clerical and research assistant staff, no new staff need to be recruited. A wide range of experience can be drawn on in the CATR, the Drama Department, and the University, in particular the Wellcome History of Medicine Centre.

6. Background – the research context & the Wellcome brief

The Wellcome Trust's Medicine in Society Programme has a stated aim of *promoting public understanding of, and debate about, the social and ethical implications of biomedical advances.*

Live performance has long been used as an educational tool in a variety of disciplines – most notably, professional theatre-in-education (TIE) which has, for some 35 years, made significant and innovative contributions to learning across the curriculum and at all age levels; and, more recently, the use of theatre within the criminal justice system and for development projects in 'third world' contexts. Small-scale evaluations of such work are frequently undertaken but tend to be limited in scope and

While research relating specifically to biomedical sciences and performance is sparse, a recent study carried out by the Wellcome Trust has indicated that ‘Science issues theatre has been shown to be effective but is not widely available.’ (Levinson & Turner *Valuable Lessons*: 12) The proposed research will directly assess the availability of ‘science issues theatre’, in a variety of contexts, including formal and informal learning; schools, youth clubs, community centres, science centres and museums. It will also assess the accessibility of science issues theatre and indicate some of the strengths and weaknesses of this educational method in comparison with other, more traditional educational methods.

Particular areas of interest include developments in genetics, where public confusion appears high, and brain science, which has far reaching implications, but the research will also consider more disparate work in order to identify appropriate models of good practice.

5. Research aims and objectives:

Research aims:

- To assess recent and current practice in the live performing arts which engages young people in the biosciences or related subjects in order to inform future funding by The Wellcome Trust.

Research objectives:

- To collect data on relevant current or recent work conducted in the UK, in consultation with a number of other bodies (e.g. Regional Arts Boards, Arts Councils, and Association of Professional Theatre for Children and Young People.)
- To identify a series of models of practice defined by key aspects of performance or education methodology or context.
- To outline the key features of these models and make reference to significant innovations (artistic, educational and in reaching new audiences), any significant collaboration between individuals or organisations (e.g. between artists and scientists) as well as any other elements of good practice.
- To examine any evaluation undertaken of the work and its conclusions, including perceived demand for the work amongst target audiences and particular implications for other organisations/institutions.
- To make recommendations to the project manager and the advisory group set up by the Trust to aid the establishment of a new programme for funding work in this area.
- To provide indicative figures of the levels of funding required to support the range of models of practice.
- To contribute to the academic profile of this area of research into practice in contemporary performing arts.

5. Research Methods

A short period will be set aside at the beginning of the research period for detailed discussion and finalisation of the research design, in collaboration with the Project Manager.

A variety of approaches will be used to achieve the aims and objectives of the research.

5.1 National survey of current practice.

A national survey will be undertaken by a full time researcher to indicate the level and nature of current activities in the field. However, due to the short time-scale of the research, this will not be completely comprehensive and would instead be a sampling of existing work. This would be undertaken through

Greenwich Young People's Theatre, M6 Theatre, Y Touring, Spectrum). While some desk-based research will be necessary, we anticipate that a high proportion of the work will need to be done by visiting and talking to key personnel across the country and, where possible, by observing work 'on location'. This will be facilitated by the employment of a part time research assistant.

The survey will address a number of research questions, including the educational and performance contexts in which work is taking place, the nature of the organisations or individuals that are carrying out this work, the levels of funding available and how budgets are utilised by different types of project.

A further component of the survey will be a one-day seminar held for invited practitioners to discuss work in the field, to share good practice and to consider a variety of ways forward. This will provide a valuable opportunity to disseminate and test the emerging findings of the research and establish whether significant areas of work are underrepresented. We envisage such a seminar being held (probably in Manchester) in early-to-mid July 2002.

5.2 Literature review concerning relevant publications in this area.

A literature review will be undertaken to assess prior work in the field, primarily in the UK but with the possibility of expansion to include, for example, key work from North America and Australia. This would include documentation of performance practice and evaluation of work carried out as well as more traditional academic work. A part time research assistant would provide assistance.

5.3 Case studies of typical models of practice.

A small number of case studies – probably four – will be carried out which identify key models of practice, drawing primarily on existing data. These would include not only work for young people but also work by young people. A variety of performance locations will also be considered, such as traditional performance space, school or community centre, museum or science education centre. New data will be generated where possible by researcher observation, but this is obviously difficult due to the short time-scale of the research and the tendency of summer performance schedules to wind down in June with the approach of summer holidays. It is envisaged that some of the case studies might be based on work that is only indirectly related to the key subject areas of the research, such as Theatre for Health Education, in order that a full range of possible models of practice are covered.

From these case studies it is envisaged that a number of key features of good practice will be drawn, which will form the basis of the report

6. Research Outcomes

6.1 All the findings of the research will be fully documented. The research will generate a variety of primarily qualitative information about current practice in the UK, backed up by appropriate quantitative data.

6.2 Quantitative outcomes include some measure of the numbers of practitioners and companies working in the field, the geographical distribution, funding levels and sources, and audience numbers where available.

6.3 Qualitative outcomes include information on the relevant subject areas that are being explored through live performing arts, whether this work is by or for young people, and in what educational context, formal or informal, this work occurs.

6.4 Further outcomes include the identification of a number of key models of practice, and highlighting particular advantages and disadvantages of these models through a number of case studies.

nature of this guidance will need to be discussed with the Project Manager as the research proceeds and as the extent and quality of the data begins to emerge.

6.5 The research findings will be presented in an interim report on the 25th July, and a full report of the findings presented in a form suitable for a broad audience will be presented at the beginning of September. It may be that the research findings could also, with the agreement of the Wellcome Trust, be disseminated to a larger professional audience through conference presentations and/or journal articles.

7. Research Team

If the proposal were to be successful, the following people would constitute the research team responsible for conducting the research and delivering the reports:

Research Director: ANTHONY JACKSON.

Anthony Jackson is Senior Lecturer in Drama at the University of Manchester, having just completed a four year term as Head of the School of Music and Drama; a co-director of the Centre for Applied Theatre Research; and, during 2001/2, a Visiting Fellow at Robinson College, Cambridge. With research and teaching specialisms in the fields of educational theatre, British and American 20th century drama and the development of regional theatre in the UK, he has lectured and given workshops at various universities at home and in the USA, Finland, Eire and Japan, as well as at international conferences such as IDEA (Brisbane 1995, Kisumu 1998, Bergen 2001) and IFTR (Moscow 1994, Kent 1998). He was for many years chair of the M6 Theatre Company (a professional touring educational theatre company) and now chairs its Artistic & Educational Committee; and is a drama adviser to North West Arts Board. He has published widely in the field of educational theatre, notably *Learning through Theatre: new perspectives on Theatre in Education* (Routledge, 1993, 1999) and recent articles/chapters on the aesthetic dimension of educational theatre, audience research, the evaluation of Theatre in Education, and the uses of participatory theatre in 'heritage education'. He is currently working on a study of the development of theatre as an educational force in the 20th century and directing a research programme (funded by the Arts & Humanities Research Board) to investigate the effectiveness of theatre and theatre techniques in museums and at heritage sites. Jackson's role will be to oversee the research design and general management of the research, to monitor progress on a regular basis, and to take an editorial role in the preparation of the interim and final reports.

Researcher: PAUL JOHNSON.

Paul Johnson has recently been employed within the CATR as full time researcher on the AHRB funded project, 'An Investigation into the effectiveness of theatre and theatre techniques in Museums and Heritage Sites.' After graduating from the University of Glasgow with an MA (Hon.) in Physics and Theatre Studies in 1994, he completed a three-year research studentship at University College Worcester, and will submit his doctoral thesis at the end of 2002. He has worked extensively in youth and community theatre, and worked on a stage adaptation of *A Brief History of Time* at the Tramway, Glasgow, including an associated science-theatre education workshop in 2001. Johnson would be appointed as full-time researcher with day-to-day responsibility for conducting the research and compiling both reports. He would be responsible, and report, to the Research Director. Regular review meetings would take place between the team members as needed normally on a fortnightly basis together with regular up-dates and monitoring via e-mail and telephone.

Note. Johnson played a vital role within the AHRB research project, proving himself an industrious, efficient and highly effective research assistant; with his background in science and the performing arts and his track record in research, CATR considers him ideally suited to undertaking this research. His contract in respect of the AHRB research ended on 31st March, therefore enabling him to commence this project at relatively short notice. (His next paid employment will not commence before the beginning of September.)

Johnson's direction, aspects of the fieldwork and collation of data as required and to assist with the one-day seminar.

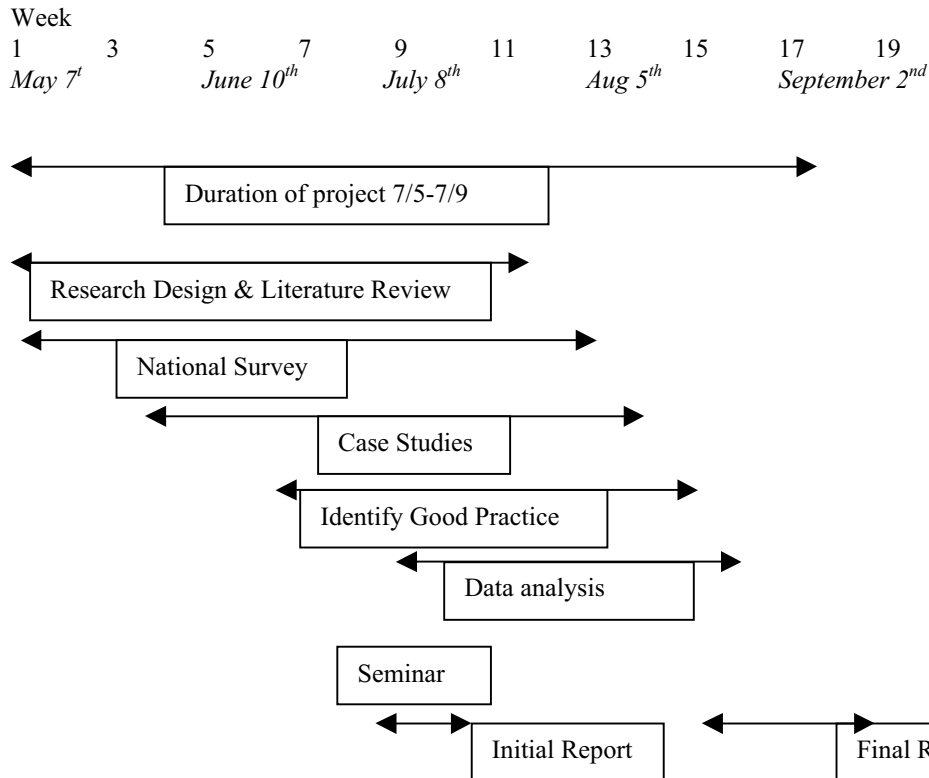
Part-time secretarial assistant – to be employed for up to 15 working days. Person to be determined but we anticipate appointing a secretary already on the university's books – possibly two people for shorter periods, dependent upon the skills offered. We will require person(s) able, among other things, to transcribe audio-tapes; to manage the budget; and to organise the one-day seminar.

CONSULTANTS.

Members of the CATR as appropriate – specifically JAMES THOMPSON (director of CATR) and JENNIE HUGHES (CATR research associate). Both colleagues have extensive experience in 'applied theatre' research, particularly in undertaking research projects and evaluations for external organisations, formulating recommendations for the development of good, innovative practice in the use of drama in a variety of 'social policy' contexts. (See list of CATR research projects in the Appendix.)

On an occasional basis, we expect to be able to consult as and when appropriate Professor JOHN PICKSTONE, Director of the Centre for the History of Science, Technology & Medicine, including the Wellcome Unit for the History of Medicine, at the University of Manchester.

9. Provisional Timetable



APPENDIX: Current Research at CATR

1. An investigation of the effectiveness of Theatre and Theatre Techniques at Museums and Heritage Sites

This research project is funded by a major research grant from the Arts & Humanities Research Board and aims to investigate the impact and effectiveness of theatre and theatre techniques when used in museums. The research team tracked the experience of groups of schoolchildren at two museums, the People's History Museum in Manchester and the Imperial War Museum, London. In each museum, some groups were given a theatre experience as part of their encounter with the collections, while others followed alternative non-theatre routes. The purpose was to identify in what ways theatre contributed to (or detracted from) the various learning processes that occurred in comparison with other methods. A primarily qualitative research methodology was employed, using semi-structured interviews with small groups of pupils complemented by other activities in order to assess recall and understanding in a variety of ways.

The research has been conducted by a four person research team led by Anthony Jackson together with Dr Helen Rees (M.A. Programme Director, Museum & Art Gallery Studies, Manchester University), Verity Walker (freelance museum consultant, London) and Paul Johnson, full-time research assistant. The study commenced in August 2001 and will be completed by 30 June 2002.

2. A study of the impact of creative processes on young people taking part in youth theatre

This study has been commissioned by the National Association of Youth Theatres, and aims to explore the impact of creative processes on young people participating in youth theatre by utilising the experiences and attributes of young people themselves. The research findings will offer detailed evidence of the impact of youth theatre on young people's personal and social development. This is a

3. Evaluation of ARTiculation, a youth arts initiative with young people experiencing social exclusion

ARTiculation is a partnership initiative between National Children's Homes and the National Association of Youth Theatres. The evaluation of ARTiculation will provide a unique opportunity to explore the impact of arts practice in tackling social exclusion experienced by young people and identify guidelines for good practice that can be generalised to other contexts. The project is in its second year of development and has a further year to run – a final report is due by December 2003.

Researcher: Jennie Hughes.

4. Evaluation of a drama based offending behaviour workshop on young offenders

Blagg is a drama-based offending behaviour programme developed by the TIPP Centre (Drama Department, Manchester University) employing drama tools and techniques to engage offenders in discussing their offending behaviour. The evaluation has been commissioned by the Manchester and Bury Youth Offending Teams, and will assess the contribution of the programme to overall service delivery of Youth Offending Teams across Manchester and Bury, in particular in reducing, and challenging attitudes to offending. The evaluation will culminate in a final report, due by December 2002. Researcher: Jennie Hughes.

5. Evaluation of 'Act Your Age' – a two year participatory arts project with older people

An evaluation of 'Act Your Age' - a participatory arts project with older people facilitated by Bolton Octagon and Age Concern Bolton. The project has involved training a group of older people in different arts skills, leading to a production of two half hour plays in the Octagon Theatre in May 2002.

Researcher: Jennie Hughes.

6. A retrospective evaluation of Contact Theatre

An exploration of the key development/learning points for Contact Theatre in Manchester since re-opening 2 years ago. Contact Theatre has enjoyed a high level of success in making its productions and events accessible to young people from local communities. The evaluation will explore and identify key aspects of planning and provision that have contributed to this success. A final report is due by September 2002. Researcher: Jennie Hughes.

Research and Evaluation projects recently completed:

7. 'A Better Place' and 'Looking Good'

Two major evaluations have been completed, leading to the publication of two reports, 'Looking Good' and 'A Better Place'. Both reports describe projects designed and facilitated by TIPP, a professional arts organisation carrying out theatre projects with offenders and young people 'at risk'. Both projects were carried out with young people from a Manchester ward that has been ranked as inside the top 1% of most deprived wards in England. The arts process therefore related to issues of using arts to break down barriers of social exclusion, an area of arts practice that has received attention from government policy makers. Both projects were commissioned by Groundwork Manchester, an organisation specialising in environmental regeneration. Researcher: Jennie Hughes.

Looking Good

Our first report, 'Looking Good', describes an evaluation of a participatory film project carried out with young people. Narrative interviews were carried out with 14 young people and four key arts workers who facilitated the project. In addition, a local parent who worked on the project as a volunteer and a representative from the commissioning organisation were interviewed. Materials from the process – the

A Better Place

This report describes an evaluation of a drama-based programme exploring themes and issues of citizenship with year five pupils from four primary schools. Over 100 children took part in a consultation exercise wherein they discussed their likes and dislikes and other experiences of the project. Qualitative interviews with drama workers and class teachers and observation of drama workshops were carried out.

Recommendations made in both reports specify a number of practical and reflective issues that can lead to improved effectiveness and better project delivery.

8. Audience Research Project: “An Investigation into the Impact upon Young Audiences of an Interactive Theatre Project”, August 2000-July 2001.

The primary aim of this research was to assess the impact upon young audiences of one professional theatre programme that set out explicitly to educate. It focused upon the nature of the ‘theatrical event’, audience recall and ‘ownership’, and the extent to which the ‘aesthetic dimension’ was perceived to be an integral part of the process by recipients (pupils and teachers), creative team and funders alike. A parallel aim was to investigate and test the appropriateness of several qualitative research methodologies, including observation and analysis of performance and audience response, and the usefulness of different styles of group/individual interviews in assessing longer-term impact and recall.

The Report was submitted to the AHRB in July 2001; a conference presentation was given at the World Congress of IDEA, Bergen July 2001; and a chapter outlining the research is to be published in the conference proceedings: Bjørn Rasmussen & Anna-Lena Østern, eds. (2002), *Playing Betwixt and Between: The IDEA Dialogues 2001*. IDEA Publications: Bergen.

Researcher: Anthony Jackson.

9. “ArtPad” Theatre for Development Resource Project

ARTPAD (A Resource for Theatre and Participatory Development) was an 18-month project based at the Centre for Applied Theatre Research, and funded by the UK Government’s Department for International Development. A major outcome was the development of a resource in theatre-based participatory development techniques with and for development workers. The resource explores the integration of theatre-based techniques in development practice, not only through issue-based workshops, but also in areas such as project planning, evaluation, decision making and research.

Research for the resource centred on the creation of a participatory research group with Brazilian NGOs, pilot groups with NGO client groups and short training courses with Peruvian NGO workers. NGOs involved in the project work in a wide variety of settings and communities including sexual health and gender education work with young men, environmental planning with indigenous communities, the gestation and evaluation of development projects and Literacy work.

Research director: Julie McCarthy.

B Questionnaire**Performing Arts and Issues in Science – Research Questionnaire**

Name/Company	
Address	
Telephone	Fax
Email	
1	In the last 5 years have you produced or commissioned live performing arts work with or for young people that in any way engages with the impact of advances in scientific research on society?
<i>If yes please go to question 2. If no please go to question 3.</i>	
2	Could you please give details of this work (If more than one production please feel free to continue on separate sheet.?) Please feel free to enclose publicity material or any other information:
Production name	
Venue/Area toured	
Scientific area addressed	
Brief description of production style (e.g. 1 hour scripted performance plus discussion, interactive in style of game show, working with young people to devise show performed to peers in assembly, etc)	
Target age group?	
Approximate total audience?	
Main funding source?	
Was any evaluation carried out?	
<i>Please go to question 3.</i>	
3	In the last 5 years have you been interested in producing work that addresses the impact of science on society?
<i>If yes please go to question 4. If no please go to question 5.</i>	
4	What has stopped you from undertaking this work (e.g. funding, lack of scientific collaborators, lack of audience demand, etc)
5	Would you be interested in producing work that addresses the impact of science on society in

6	What might prevent you from attempting to seek funding for this work (e.g. lack of perceived audience demand, etc)?

Please go to question 8

7	What are the main reasons that deter you from undertaking this type of work (e.g. don't consider this a suitable area for theatre education, etc.)?

8	Would you consider the Wellcome Trust as a possible source of arts funding?

Please return completed questionnaire to:

Paul Johnson
Centre for Applied Theatre Research
Department of Drama
University of Manchester
Oxford Road
Manchester
M13 9PL

THANK YOU VERY MUCH FOR YOUR HELP

C Questionnaire Recipient List

Questionnaires were sent to the following companies:

Company Name
1. 6.15 Theatre Company
2. Action Space Mobile
3. Action Transport Theatre
4. All Hands Gallery Gallery of National Maritime Museum
5. ARC Theatre Ensemble
6. Arts Catalyst
7. Association of Professional Theatre for Children and Young People in the UK and Ireland.
8. at-Bristol
9. BAC Battersea Arts Centre
10. Barking Dog Theatre Co
11. BBSRC
12. Belgrade Theatre Co
13. Big Fish Theatre Company
14. Big Idea
15. Big Wheel Theatre in Education
16. BigFoot Theatre Co
17. Blah, Blah, Blah.
18. Blast Theory
19. Blunderbus Theatre Co Ltd
20. Bobby Baker
21. Booster Cushion Theatre
22. Box Clever Theatre Co
23. Box Clever Theatre Co.
24. C and T
25. Centre for Alternative Technology
26. Centre for Arts and Humanities in Health and Medicine (CAHHM)
27. Centre for Medical Humanities (CHM)
28. Centre for Research into Creation in the Performing Arts (ResCen)
29. Chain Reaction Theatre Company
30. City Arts
31. Clod Ensemble
32. Company of Angels
33. Contact Theatre
34. Cornelius & Jones Original Productions
35. Cultural Industry
36. Curiosity
37. David Glass Ensemble
38. Deep, The
39. Discovery
40. Discovery Centre
41. Discovery Museum
42. Discovery Outpost

Company Name
45. Edinburgh International Science Festival
46. Emergency Exit Arts
47. Engine House Project
48. English Touring Theatre
49. Environmental Arts Theatre Company
50. Eureka
51. European Theatre Company
52. Exploring Science Travelling Exhibitions
53. Exploris
54. Forced Entertainment
55. Foredown Tower
56. Forkbeard Fantasy
57. Fun + flight Gallery
58. Fun 'n' flight Gallery
59. Futures Theatre Company
60. Get Wired
61. Glasgow Science Centre
62. Grand Union Music Theatre
63. Green's Mill and Centre
64. Greenwich Young Peoples Theatre Ltd
65. Hackney Building Exploratory
66. Half Moon Theatre
67. Hampstead Theatre
68. Hands-on our world, Horniman Museum
69. Haymarket Theatre
70. Hull Time Based Arts
71. Indigo Brave Theatre Co
72. INSPIRE
73. Intech
74. Interplay Theatre
75. Jodrell Bank Science Centre
76. Kabosh
77. Kaos Theatre
78. Lantern Theatre (The Dilys Guite Players Ltd)
79. Leeds Childrens Theatre
80. LIFE Interactive World
81. Livesey Museum for Children
82. London Bubble
83. London Wetland Centre
84. Look Out Discovery Centre
85. Lowry Centre - Artworks
86. Lyric Theatre
87. Magic Carpet Theatre
88. Magic Mathworks Travelling Circus
89. Magna Science Adventure Centre
90. Making It! Discovery Centre
91. Making Place

Company Name	
94.	Mental Health Advice Training (MHATS)
95.	Misrule Theatre Co
96.	Monster Productions
97.	Moti Roti
98.	Moving Stage
99.	Museum of Science and Industry in Manchester
100.	National Association of Youth Theatres
101.	National Endowment for Science, Technology and the Arts (NESTA)
102.	National Maritime Museum (edn and interpretation dept)
103.	National Network for the Arts in Health (NNAH)
104.	National Railway Museum
105.	National Space Centre
106.	National Stone Centre
107.	Natural History Centre
108.	Natural History Museum
109.	Natural Sciences Centre
110.	New Kinetic Theatre Co
111.	New Peckham Varieties
112.	Nottingham City Council
113.	Observatory Science Centre
114.	Oily Cart Theatre Co
115.	Original Mixture Theatre Co
116.	Our Dynamic Earth
117.	Oxford Trust
118.	Pace Theatre Company
119.	Paines Plough
120.	Palace Theatre, Watford
121.	Pascal Theatre Co
122.	People's History Museum
123.	Physico Theatre
124.	Pilot Theatre Company
125.	Play House
126.	Playtime Theatre Co
127.	Polka Theatre
128.	Polka Theatre Co
129.	Pop-Up Theatre
130.	Primitive Science
131.	Puppet Centre
132.	Quicksilver theatre
133.	RAF Museum
134.	Reckless Sleepers
135.	Regeneration Theatre Co
136.	Right Size
137.	Royal Observatory Visitor Centre
138.	Salamander Theatre Co
139.	Satrosphere
140.	Scarlet Theatre Company

Company Name	
143.	Science Museum (2)
144.	Science Museum, Wroughton
145.	Science Projects
146.	Scope
147.	Search
148.	Sellafield Visitor Centre
149.	Sensation - Dundee's Science Centre
150.	Small World Theatre
151.	SNAP Peoples Theatre Co
152.	Snibston Discovery Park
153.	South West Youth Theatre
154.	Spellbinder Productions
155.	Station House Opera
156.	Stephen Joseph Theatre
157.	Studio 3 Arts
158.	Suspect Culture
159.	Table Show
160.	Tag Theatre Company
161.	Tall Stories
162.	Tamasha Theatre Company
163.	Tara Arts
164.	Techniquet
165.	Thackray Medical Museum
166.	Theatre Absolute
167.	Theatre Venture
168.	Thinktank
169.	Thinktank at Millennium Point
170.	Third Angel
171.	TIE Tours
172.	Tiebreak Touring Theatre
173.	Told by an Idiot
174.	Traverse Theatre
175.	Tricycle
176.	UK Arts International
177.	Unicorn Theatre for Children
178.	Uninvited Guests
179.	Vanishing Point
180.	Vital Stages Theatre Co
181.	W5
182.	Whalley Range All Stars
183.	Xperiment!
184.	Y touring company
185.	Yellow Earth Theatre
186.	Young People's Theatre
187.	Young Vic Theatre Co
188.	Zuriya Theatre Co

Company Name
1. 6.15 Theatre Company
2. 6.15 Theatre 2 Company
3. Action Space Mobile
4. Action Transport Theatre
5. ARC Theatre Ensemble
6. BAC Battersea Arts Centre
7. BigFoot Theatre Co
8. Blunderbus
9. Bobby Baker
10. C and T
11. Cornelius & Jones Original Productions
12. Cultural Industry
13. Discovery
14. Discovery Museum
15. Discovery Outpost
16. DNA Dynamic New Animation
17. Edinburgh International Science Festival
18. Forkbeard Fantasy
19. Glasgow Science Centre
20. Hampstead Theatre
21. Indigo Brave Theatre Co
22. INSPIRE
23. Jodrell Bank Science Centre
24. Kabosh
25. Lantern Theatre (The Dilys Guite Players Ltd)
26. Leeds Childrens Theatre
27. London Bubble
28. Manchester Museum
29. Mapmakers
30. National Association of Youth Theatres
31. National Maritime Museum (edn dept)_1
32. National Network for the Arts in Health (NNAH)
33. National Space Centre
34. New Kinetic Theatre Co
35. Nottingham City Council
36. Oily Cart Theatre Co
37. People's History Museum
38. Physico Theatre
39. Pop-Up Theatre
40. RAF Museum
41. Satosphere
42. Science Projects
43. Small World Theatre
44. Snibston Discovery Park
45. South West Youth Theatre
46. Spellbinder Productions
47. Station House Opera

Company Name
50. Techniquest 1
51. Techniquest 2
52. Thackray Medical Museum
53. Big Idea
54. Making Place
55. Museum of Science and Industry in Manchester
56. Natural History Museum
57. Oxford Trust
58. Play House
59. Theatre Absolute
60. Third Angel
61. Told by an Idiot
62. UK Arts International
63. Vanishing Point
64. W5
65. Whalley Range All Stars
66. Yellow Earth Theatre
67. Young People's Theatre

D Seminar Programme

Performing Arts and Issues in Science Seminar
13 July 2002

Jubilee Room, Refectory Building

Timetable

10.30	Coffee and Tea
11.15	Introduction Tony Jackson
11.30	Session 1 Where have we been? Reflection on past work and issues raised. Inputs from Simon Perry, Steve Mease, Claudette Brunton

- 13.15 **Lunch**
- 14.00 **Session 1**
Where do we go from here? What are the debates we need to have? New ways of working and possibilities for the future.
Inputs from Dominic Dickson, Rachel Cooper, John McGrath.
- 14.45 **Discussion** – implications for practice of the issues raised, implementation, levels and categories of funding, brokering and partnerships.
- 3.30 **Coffee and tea**
- 3.45 **Session 3**
What recommendations might we make?
- 4.30 **End**