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Engaging Industrial Designers With Music Therapy

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Abstract

This article notes current practice concerning the sources and selection of instruments for use in music therapy. It indicates the nature of designing as a tool for innovation and change, and hence the possibilities that could result from engaging music therapy and designing. The designers were finalists at Loughborough University and the strategy used to enable them to undertake designing for music therapy is explained. Five concept designs for inclusive artifacts to support music therapy were proposed, prototyped, and evaluated. Images and video were placed on the project Web site and feedback obtained through an online questionnaire ($n = 27$). Data were gathered concerning matching population characteristics and clinical environments to the artifacts. Potential acceptable prices for the designs proposed were also explored. The outcomes are discussed in the contexts of reflecting on the potential benefits for music therapy from such engagement with design and associated models of good practice.

Keywords

designing, innovation, instruments, music therapy

Current Practice Concerning Instrument Selection for Music Therapy

Generally, music therapists use existing musical instruments and toys in their work. This can be an effective strategy and music therapists are very creative in their practice. The few instruments designed and marketed for use in music therapy tend to be expensive as the market for these products is small. There are numerous ways in which sounds can be produced and the Sachs-Hornbostel system divides these into five groups:

- idiophones (sound is produced as the instruments vibrates; eg, xylophones);
- membranophones (sound is produced as a membrane vibrates; eg, drums);
- chordophones (sound is produced as a string vibrates; eg, violins);
- aerophones (sound is produced by a column of air vibrating; eg, flutes);
- Electrophones (sound is produced by electronic means).

Table 1 demonstrates that instruments in all the Sachs-Hornbostel categories are recommended for use in music therapy.[1] Other factors, such as the form of sensory and emotional interaction between the client and the instrument are the underlying reasons for the recommendations. Music therapists also need to provide a selection of instruments to offer clients a choice of what to play. The instruments that they make available are likely to include ones that are accessible to nonmusicians. They are chosen as they are all the type of instruments with which you can start to create sounds immediately and without any specific musical training. For example, a hand drum, of some kind, may be provided. To the majority of people it is possible to start playing this instrument and to make sounds immediately by tapping the top with their hands. A set of wind chimes also offer an immediate opportunity to create sound when touched by a client, as the magnitude of the sound it makes and the movement by the client are directly related. Conversely, an instrument such as a trombone would be less likely to be chosen, as making a sound is a more complex task. The trombone requires you to blow in a specific way and also to potentially use your hands to alter the sounds.

Having quality instruments to use is important, as Nordoff and Robbins,[2(p83)] two of the pioneers of music therapy, said

> The better your equipment, the more confidently you set up a music therapy program; the more assorted your equipment, the richer the variety of activities and experiences in which you can involve the children.

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Table 1. Sachs-Hornbostel Categories of Recommended Instruments in Current Use in Music Therapy

Recommended Instruments in Current Use From *The Handbook of Music Therapy*	Sachs-Hornbostel Category
Range of drums for stick drumming and for palm drumming (eg, djembe or congas), bongos, tambourine, tambour, ocean drums	Membranophones
Gato/tongue drums, claves, wood blocks, castanets, temple blocks, maracas, rainstick, guiro, cymbal, cabasa, chinese gong, flexatone, windchimes, range of bells, metallophone, glockenspiel, individual tone bars	Idiophones
Plucked instrument (harp, lyre, etc), guitar, autoharp	Chordophones
Swanee whistle, bird call whistles, Nordoff-Robbins reed horns (and reeds)	Aerophones
Digital piano, ideally with MIDI capacity, compositional/sound producing programmes (eg, MidiGrid), instruments (eg, soundbeam), music writing tools for computers (eg, Sibelius/Cubase Score)	Electrophones

A general goal in music therapy is to improve well-being; music therapy helps provide those elements of choice and feeling in control, which are important for developing a healthy mind. By choosing their own instruments, clients immediately have some control over what is happening in the session and start to express themselves through the choices they make. Music therapy emphasizes the use of live improvised music making in clinical work. This can give the client an experience of being in control and choosing whether and how to play.

> During musical improvisation clients often experience that they can express themselves from a layer of inner resources that seems healthy and assertive despite many other 'layers' of self-devaluation in the personality.[3(p85)]

Hence music therapists select instruments that offer clients control and the opportunity to express themselves and participate in music therapy. The instruments currently available clearly offer adequate opportunities for successful therapeutic practice, but music therapists also make adaptations. These are indications of dissatisfaction with the existing alternatives, and hence there are design opportunities to be found. Some adaptations are simple and are easily done by the therapist, for example tuning a guitar to an open tuning. A standard guitar tuning is EADGBE. An open tuning may have all the strings tuned to the notes of a major chord; a D major tuning would be DADF#AD. Alternatively, the tuning could be modal; DADGAD tuning is a common choice. The open tunings make it easier for a client to start using the guitar and make musical sounds. The therapist might take some notes off a glockenspiel to leave only a pentatonic scale (eg, ACDEG). When playing in a pentatonic scale it is not possible to play discordant notes, which may be important in supporting participation in a musical improvisation.

Some musical instrument companies now sell percussion instruments with specially adapted stands to make them more accessible to clients who have physical disabilities. For example, a bell tree or cabasa can be bought attached to a stand, which makes it easier to play. However, the price of the special adaptation is usually high. Currently, one supplier sells a bell tree for £27.95 and an adapted version for £91.50, which is a 227% increase in price. Specially adapted beaters are available, which may be lightweight, have thicker or easier to grip handles or special cuffs to assist the client in holding the beater in their hand. Nordoff-Robbins reed horns are often used by therapists, as they are a single-reed horn. They are supplied with a set of reeds so the pitch can be changed to fit the tonality of the music that is being played. Nordoff-Robbins reed horns are straightforward to play and make a satisfying, loud single note.

Another example of an instrument which is ideal for use in music therapy, but very expensive, is the Sounding Bowl.[4] Sounding bowls of various types consist of a set of strings stretched across the top of a wooden bowl. The instruments have the beauty associated with a well-selected and finished natural material. A sounding bowl might be played in a similar way to the open strings of a guitar or a harp, but is easier to hold, as it is bowl shaped. These instruments can cost thousands of pounds. Music therapists have sometimes been able to fund raise to purchase expensive instruments. However, they face increasing pressure to manage costs while still being able to offer effective instruments to clients.

Some music therapists use electronic music technology in their work. Such technology can enable clients with little active movement to create musical sounds, and often this means the use of MIDI (note 1) generated sounds. The use of music technology is a growing area of interest for music therapists; recently in the United Kingdom, a technology interest group has been established for the Association of Professional Music Therapists (APMT) members. The group brings together music therapists across the United Kingdom to share knowledge about using technology in their work. The special issue of this journal is one of many examples of growing interest and enthusiasm for using technology to enable clients to participate in music therapy.

Magee[5] completed a UK-based survey of music therapists' experiences and attitudes toward music technology in the electrophones category. The most used products were the Soundbeam,[6] Midicreator,[7] and software with specialist input devices. She concluded that there are some excellent products available for therapy work but not all therapists use them. The reasons therapists gave for not using these kinds of technologies in their work included lack of skills/training/confidence, lack of resources, high cost, not having time to set up equipment, not liking them, conflicts with therapists' theoretical

approaches, and preference for the direct contact and engagement with acoustic instruments

Beyond the requirements of clinical practice, other more general factors also influence music therapists' choice of instruments. Storage and transport result in several constraints.

Some music therapists have a room at their place of work where their instruments and equipment are stored. Other therapists work in several different locations in a day and travel from place to place to do their sessions. In these circumstances, the therapist usually brings the instruments and equipment for the session to each place of work. Therapists use various different boxes/cases/trolleys to transport instruments. The therapist may only have a few minutes to get the setup ready for the session. Cost is another key factor. Music therapists typically have small budgets to spend on equipment, and investing in new instruments is likely to be carefully considered. Therapists are also likely to have strong personal preferences for which types of instruments they choose.

So current practice concerning the selection of instruments by music therapists represents the outcome of balancing a range of complex factors concerning categories of available musical instruments, the potential for simple adaptations, the requirements of clinical practice, the circumstances and preferences of the therapist and the context in which it is carried out.

Potential for Innovation

The analysis of current practice has already indicated some of the potential for innovation, and recently designers have begun to find ways of exploring such potential, which is normally referred to as "design thinking." In discussing how this has impacted his company (California-based IDEO), Brown[8(p10)] noted that they were increasingly being asked to tackle problems that were seemingly far removed from the traditional view of the role of designers.

> A health care foundation was asking us to help restructure its organisation; a century-old manufacturing company was asking us to help it better understand its clients; an elite university was asking us to think about alternative learning environments. We were being pulled out of our comfort zone . . . .

It has not just been California that has seen such trends developing. In the United Kingdom, there have been projects concerning "Design against Crime," and the Design Council has completed projects for the Home Office in areas such as airport security and terrorism. So it is proposed that design thinking can bring new approaches to areas that might not have been previously seen as the natural context for designers.

Of course, designing in its traditional forms has been undertaken in many areas relating to medicine and therapy, from equipment design to interior and exterior architecture. However, designing for music therapy is an area which has been overlooked and there are many reasons why this could be the case. There have been instruments developed with music therapy as one of their target markets. An example is the MIDI Creator, which was developed from engineering research and development at the University of York. However, collaboration between music therapists and designers is certainly not common. There are many groups involved in adapting instruments to make them more accessible to people with disabilities.[9] This approach to making musical instruments, which focuses on inclusion is sometimes known as adaptive music. However, although there is overlap between adaptive music instruction and music therapy, they are separate disciplines.[10]

A major factor in the lack of design projects for music therapy could be that instruments are perceived as evolving or preexisting, not as design outcomes. The existence of the practice-based research concerning the design of polymer acoustic guitars[11-13]is a surprise to many because there is an unarticulated belief that "guitars must be wooden." Harrison has described such research as part of the journey of transforming knowledge from the tacit to the articulate,[14(pp58-59)] and such a transition is an inevitable feature of this kind of project. Music therapists and others have tacit knowledge about the requirements for therapeutic practice that can be articulated through engagement with designing. Practice-led research, such as that reported here, is about agenda setting and revealing the opportunities for innovation. A project Web site "Music and Design Research"[15] was established to support the research project. This Web site was in the public domain and consequently patent opportunities were not going to arise from the research because of prior disclosure. The essential goal of the research was to demonstrate that current practice was not inevitable and that change was possible.

There are other factors, such as the small market volumes and the newness of the music therapy field, that could explain the relative lack of attention it has received from designers, but as music therapy grows in worldwide recognition and importance, this is a situation that is likely to change.

The Designers

Professional designers command significant fees for their work, and although it was always intended to involve final-year undergraduates in the research, funding applications were made to enable professional designers to also be involved. Regrettably these were not successful, and so the inexperience of the undergraduate designers must be acknowledged as a limitation of the research outcomes. However, the finalists on Loughborough University's Industrial Design and Technology undergraduate programs are very talented and were well equipped to make inroads in this design area. Industrial design is as much concerned with problem finding as it is with problem solving, and the student projects reported here are seeking to give concrete expression to ways in which design can support music therapy.

The projects reached their conclusions with "one-off" prototypes that were evaluated and displayed at the 2009 Degree Show at Loughborough University. Their roles were much the same as "concept cars" and making such designs generally available to music therapists will depend on achieving the next

step: some form of "commercialization." Otherwise the prototypes will continue to represent interesting design ideas and their construction will remain relatively expensive. For this reason, all the students inevitably considered designing as inclusively as possible and maximizing their market in order to give their ideas the best possible chance of being realized. If a design can support music therapy with clients of a wide range of ages and abilities, and in a broad range of contexts, then it will have a greater chance of success. If a design could also find some acceptance in either the mainstream music instrument or toy markets, then there is an even greater chance of it being commercialized. If a design remains targeted at a niche aspect of music therapy, then it would need to be made in low market volumes and with associated high costs. Such designs would more likely frustrate the music therapists with glimpses of the unattainable than result in accessible support for their clinical requirements.

Research Strategy

The research questions for the project were the following:

- Are there mutual benefits to be obtained through engaging industrial designers with music therapy?
- If so, how can this be achieved?

There are evident difficulties in enabling designers to become engaged with their ultimate clients (the patients) and to observe therapy sessions, which are commonly confidential. Consequently, it was decided to prepare a Web site (Music and Design Research) and an associated briefing document (project overview), which could be downloaded as a pdf document. The Web site contained short definitions and explanations of music therapy, links to available videos, the downloadable project overview, and contact details. A design section was added when the prototypes became available. The project overview included sections on:

- what is music therapy (images, definitions, origins, who is it for, where it takes place, what happens in a session);
- environments (spaces therapists work in);
- equipment and instruments (things music therapists use);
- storage and transport (how instruments and equipment are transported);
- multisensory (multisensory experience of music);
- design opportunities (what might be designed).

As many links as possible were included to videos, professional organizations, such as the APMT and the Nordoff-Robbins Music Therapy Centre, and equipment suppliers.

Initial meetings were held with interested students, once they had reviewed the Web site and briefing document. At the meeting, the students were able to get feedback on their initial thoughts and hence begin to establish a sense of direction. Further feedback was given as ideas developed and as students accessed other sources of information. For example, individual students arranged visits to the Nordoff-Robbins Centre (note 2) and the National Autistic Society (note 3), and they discussed their ideas with experts on areas such as inclusive design, both within Loughborough University and beyond it. The students also made the extensive searches of the Internet that would be expected, looking for insights, both for their designing and to facilitate prototyping.

For the industrial designer, prototyping is not the end of the designing activity but a central key step in its completion. This has been emphasized in recent reports from the UK's Design Council following visits to institutions in America[16] and Europe[17] in order to establish best practice. Loughborough Design School shares this philosophy and is well equipped for prototyping. As a normal aspect of their designing, the students would expect to create prototypes in order to both reflect on their ideas and encourage quality feedback from nonspecialist designers. Design students and their tutors are able to discuss the issues surrounding design ideas on the basis of visual and verbal sketches and more so as drawings become further developed. However, it is not appropriate to expect music therapists to be able to give detailed assessments of concepts that have yet to be brought into reality.

When the prototypes were completed, they were photographed and short videos were created in order to make feedback from music therapists possible via the "Music and Design Research" Web site. A questionnaire was also designed in order to structure the feedback and focus on areas that were believed to be central to the evaluation. These were the age ranges for which the products were believed to be most suitable; the different abilities for which they might be appropriate; the group sizes to which the products were most suited; the therapeutic environments in which they could be used; and the price range that the therapists would be prepared to pay.

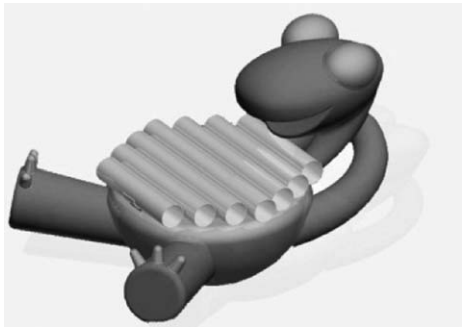
The designs were shown at 2009 Loughborough University Degree Show, *indetail09*, alongside the other designs (approximately 130) and were well received. The research project and the designs have also been presented at 2 international conferences: *The Music of Music Therapy*[18] and *Music Technology: Solutions to Challenges*[19] and again positive responses were received.

Design Outcomes

The concept designs that resulted from the work of the 5 undergraduate finalist designers are shown in Table 2 below.

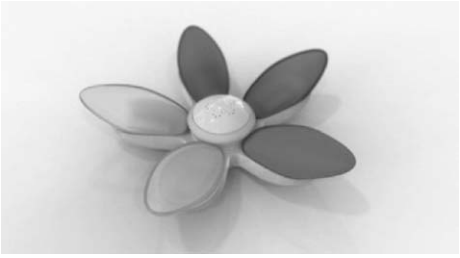
The designs have several common features. Noticeably, all of them can be used by more than one person or have been specifically designed to enhance group communication and encourage clients in music therapy to share experiences. The musical object *My-jellyglow* is a sensory object including features that produce sound. However, its musical output is not its main feature. It also has the benefit of being an object shared between group members. This encourages members to face each other, encouraging imitation and interaction. These are all goals within music therapy. The *Musical Turtle* embodies a number of instruments that are in current usage in music

Table 2. The Design Outcomes Resulting From "Designing for Music Therapy" by 5 Finalists From Loughborough University in 2009[a]

The Design	Target Client Group/Market	Description
My-jellyglow  by Megan Ainsworth	• Children aged 4-8, with verbal communication learning difficulties (specifically autism) • Schools and music therapy centers	• Device for sharing and promoting communication, between children and between the child and therapist • Multisensory • Intriguing and appealing • Glows and changes color • Inclusive as users face each other when using it • Intensive interaction can copy or choose the same sensory object
Musical Turtle  by Johnny Townson	• Young children • Nurseries, primary schools, and music therapy centers	• Multisensory acoustic instrument • 13 different sounds • Different instrument (eyes remove and are shakers, legs are rain sticks), main part is body with a curved shell which plays like an ocean drum • Silicone, rubber material, soft, tangible • As shakers play they light up • Can be used with an individual or group
Rotating Group Xylophone  by Adam Lorrimer-Roberts	• Children aged 3-10 • Schools and music therapy centers	For 3 people to play • One turns, controls tempo • Others play notes as they arrive in front of them • Players use beater but do not need to move their hand • Can be used on the floor or on a table
Digital Flute  by Alex Baker	• Musicians, music therapy clients of all ages • Schools, musicians, music therapy centers	• A MIDI controller, which can blow like a normal flute and has touch-sensitive buttons to get different notes. This is the same way that a wind synthesizer is played • Comes apart in 2 halves and they can be used as accelerometers to play a whole range of electronic sounds, start and stop music and add own sounds to a piece • Can use whole arm movement to make sounds or no movement and just blow so good for different abilities • Suited to professional musicians

(continued)

Table 2 (continued)

The Design	Target Client Group/Market	Description
Tactile Musical Flower  by Martin Yates	• Young children aged 0-5 • Nurseries and music therapy centers	• Toy for young children • Electronic sounds produced by squeezing the removable petals (wireless) • Tunes can be played, a section of the tune being played by each petal and they light up as prompts to the child to squeeze • Can turn off lights so squeeze in any order • Can use any sounds, petals effectively become like the keys of a keyboard

[a] Colored images and video files can be found at www.musical-research.org.uk.

therapy. Hence when it is disassembled, the component parts are instruments that can be shared by members of a group. Similarly, the *Digital Flute* can be split enabling it to be shared by 2 players. If more than one *Digital Flute* was available, then they could be used by larger groups. The accelerometer that is contained within the flute detects movement and allows each participant to add their own sounds to a piece of music. The *Rotating Group Xylophone* needs more than one person. Therefore, it encourages the changing of roles within a group, as the person controlling the speed has a different role to the others who play the notes. The *Tactile Musical Flower* could also be effective within a group as the petals can be handed to different participants who then each have a role to play. For example, children could press their petal when it lights up in order to play a tune together.

Each design has been carefully considered to have at least one specific application and target market. For example, *My-jellyglow* is designed for young children with autism who are developing communication skills. The *Rotating Group Xylophone* is designed for use with groups of children in schools. However, it was equally important that the designers sought to maximize the potential markets for their designs in order to improve the chances of commercialization. Some of the designs have sought to achieve this through targeting proximity to the toy market. This would apply to the *Rotating Group Xylophone* and also to the *The Musical Turtle* and *Tactile Musical Flower*. The designer of the *Digital Flute* has taken a different route and sought to design an instrument that could be of interest to professional musicians, as well as being used within music therapy.

The multisensory experience of taking part in a music therapy session has also been incorporated into several of the designs. *My-jellyglow* is targeted at providing multisensory experiences, and sound creation was only a minor aspect of the design proposal. It successfully provided visual and tactile experiences through its form and the sensory objects attached to its surface. However, development of further sensory objects could focus more on sound production. The *Musical Turtle* and *Tactile Musical Flower* have specific visual appeal for young children and are interesting to explore as they are disassembled. So it can be seen that the student designers have developed insights from the briefing materials, from discussions with music therapists and other experts, and from their own research, memories, and imagination. They have embodied those insights into the designs they presented.

Design Evaluation

Once the prototypes were available, image and video files were placed on the project Web site, which was linked to an online questionnaire in order to obtain some initial feedback. Music therapists were contacted by e-mail asking them to respond to this questionnaire through a network located in the East Midlands (note 4). The students had also received feedback and advice from some special education teachers and parents who were closely linked to music therapy during the development of the design proposals. These people were also asked to respond to the questionnaire. So, the respondents to the questionnaire were a mixed group of music therapists and interested teachers and parents. The data were collected over a period of approximately 3 days. From a design perspective, in order to have a realistic chance of being commercialized successfully, all these stakeholder groups must see merit in a particular proposal. If any of the designs appeared to be promising to the majority of the respondents, then an essential next step would be detailed market research with particular groups in order to refine that design. However, for the initial design evaluation, this was not the goal and consequently the specific status and identity of the respondents to the questionnaire was not requested and it was completed anonymously. There were 27 respondents.

The questionnaire asked respondents for comments on the appropriateness of the designs for different:

- age groups;
- types of user;
- group sizes;
- environments;
- price ranges.

Table 3. Respondents' Views on the Potential of the Designs for Different Age Ranges

Differing Age Ranges	*My-Jellyglow*	*Musical Turtle*	*Rotating Group Xylophone*	*Digital Flute*	*Tactile Musical Flower*
<2	21	17	3	0	8
2-5	19	19	8	2	23
5-10	7	14	20	13	19
10-16	21	1	13	21	1
16 +	0	1	5	17	1

Table 4. Respondents' Views on the Potential of the Designs for Different Abilities of the Users

Differing Abilities of Users	*My-Jellyglow*	*Musical Turtle*	*Rotating Group Xylophone*	*Digital Flute*	*Tactile Musical Flower*
Able bodied/ minded	14	23	24	27	25
Users with Autism	22	16	17	8	19
Users with a learning disability	25	17	17	11	20
Users with a physical disability	17	8	9	8	17

Table 5. Respondents' Views on the Potential of the Designs for Different Group Sizes

Potential For Individual And Group Use	*My-Jellyglow*	*Musical Turtle*	*Rotating Group Xylophone*	*Digital Flute*	*Tactile Musical Flower*
Individual	12	19	4	27	14
Small group (2/3)	23	11	25	6	20
Medium group (4/5)	13	5	5	1	16
Large group (5+)	4	3	2	2	3

The questions aimed to establish whether the designs would be likely to be used with the types of clients who are typically referred for music therapy. For example, with which age groups they might be useful or accessible for people with disabilities. Also considered were the possibilities for using them in wider contexts, such as in educational settings and in the home. The approximate acceptable price ranges were explored in order to establish to which markets the products may be suited and whether designs of this type should be put into production.

The results obtained are shown in Tables 3 to 7. The number of respondents who felt that a particular descriptor applied to a particular design is shown in the tables. Hence the maximum score in any column is 27. This is not a large sample, but the results can still be regarded as useful initial indications of the likely effectiveness of the design outcomes.

Table 6. Respondents' Views on the Potential of the Designs for Different Environments

Potentially Suitable Environments	*My-Jellyglow*	*Musical Turtle*	*Rotating Group Xylophone*	*Digital Flute*	*Tactile Musical Flower*
In the home	17	23	14	27	24
Music therapy centers	18	17	23	19	26
Schools/ nurseries	24	21	24	16	27
Outdoors	5	10	4	6	7

Table 7. Respondents' Views of Acceptable Price Ranges for the Design Proposals

Acceptable Price Range	*My-Jellyglow*	*Musical Turtle*	*Rotating Group Xylophone*	*Digital Flute*	*Tactile Musical Flower*
Under £20	4	15	8	3	11
£20-£40	13	8	14	6	16
£40-£70	8	3	2	8	6
£70-£100	3	0	4	9	1
£100-£150	1	0	2	11	0
Over £150	0	0	0	1	0

As Table 3 shows, the responses suggest that the designers had broadly matched their target markets. Perhaps the most surprising result was that *My-jellyglow* was regarded potentially useful both with younger children and with adolescents, and it is likely that the respondents had 2 very different situations in mind. This result warrants further exploration.

From a design perspective, the most crucial aspect of the results in Table 4 is that all 5 designs were essentially regarded as inclusive across a range of abilities. This holds out the possibility of larger markets and the economies of scale necessary to make the products available at reasonable cost. Costs could be lowered further if the toy market could be opened up as well.

For music therapy groups, 5 participants would be considered a large group and hence the results in Table 5 are perhaps much as would be expected. *My-jellyglow* was designed for people to group around, and the *Tactile Musical Flower* was designed to distribute and encourage group action, so the larger number of respondents who felt they had potential with medium sized groups might also be expected.

The wide range of environments in which it was thought the designs could be effective as shown in Table 6 is again encouraging for the establishment of wider markets. The outdoors is not really significant for music therapy as currently practiced, but it does suggest that a product such as the *Musical Turtle* could find its way on to school fields or be taken on family outings.

The results shown in Table 7 are perhaps the most telling of all from a designer's perspective. The only product that could command a high price (£100-£150) was the *Digital Flute*, which is also the product which crosses over most obviously

with the market for musical instruments. *My-jellyglow*, the *Rotating Group Xylophone*, and the *Tactile Musical Flower* would all need to be delivered to customers at under £40 and the *Musical Turtle* at under £20. These are challenging targets, but by no means impossible with large enough markets to support the use of appropriate manufacturing technologies.

Concluding Discussion

In relation to the 2 research questions, the project can be regarded successful at many levels.

Mutual Benefits

It is quite clear that music therapy provided a rich context in which the undergraduate designers could demonstrate their emerging competence. It was challenging and worthwhile, with great potential for innovation. It seems equally clear that the designs the undergraduates produced have demonstrated that instruments for music therapy do not have to be selected from those currently available or adapted from them. Change is a possibility. Delivering on that change agenda requires both more thorough evaluation of these prototype designs and concerted efforts by designers to respond to the possibilities. However, the possibilities are there. Moving from this starting position to visions of products that might make life better for music therapists and their clients is not a great step, and probably a lesser step than the undergraduates have already made. Nevertheless, designing a "Mini" has always been acknowledged to be rather harder than a "Rolls Royce," so it would be as well not to underestimate the difficulties.

The Model of Engagement

Creating a Web site and briefing document for designing music therapy did require initial effort and it was quite possible that none of the 130 finalists would have been interested in this design context. Fortunately, this turned out otherwise. There were similar risks associated with a professional music therapist giving his or her time to support student designers, who might have delivered nothing worthwhile in return. This project was possible because all the participants were prepared to be involved with no guarantees of success but with a genuine interest and desire to explore the potential benefits of collaboration. From the authors' professional experience it appears that designers have had little involvement in supporting music therapy. The model of engagement reported here demonstrates that with careful briefing and good support, "even" undergraduate student designers have demonstrated how designers and designerly thinking could make a difference in the music therapy world. What might professional designers be capable of?

There are many design schools throughout the world, and their number is growing. This research project has demonstrated a model of good practice that could be replicated and developed in order to facilitate the involvement of talented young designers in designing for music therapy. Creating preferred futures, or a better world, would be sure to be among the reasons given by young designers for deciding to pursue a design career. Enabling them to do so in the music therapy context requires music therapists to believe in design students' abilities to create and innovate and invest time and energy in providing a supportive environment. The Music and Design Research Web site provides a starting point and its authors believe that music therapists would not be disappointed in the return from their investment, should they choose to support similar future initiatives.

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Notes

1. Musical Instrument Digital Interface (MIDI) was adopted in 1982 and is an industry wide system of standardizing technology in electronic musical instruments so they can work together.
2. http://www.nordoff-robbins.org.uk/.
3. http://www.autism.org.uk/.
4. At the time of this project, Liz Norman was the coordinator of the East Midlands Music Therapy Group, which is an independent network of music therapists. The East Midlands is the region of the United Kingdom in which Loughborough University is based.

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Bios

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