

USES OF AUDACITY (AUDIO EDITOR AND RECORDER) IN INNOVATIVE MUSICAL EDUCATION AND COLLABORATIVE CREATION

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SUMMARY. The present study is based on our experience and observations as a university lecturer teaching *Musical Education and Teaching Methods for Music* as a discipline. We have found that students enrolled at the Faculty of Psychology and Education Sciences, with a specialization in the Pedagogy of Primary and Pre-school Education, having German as language of instruction, need additional activities in order to develop the competences they need in designing audio-based musical lesson plans. In this respect, we have explored many options in order to find the most up-to-date and appropriate means to carry out our research, which led us to Audacity, a free multi-track audio editor and recorder. Among the most important objectives of this research we can mention making effective use of the Audacity program to create novel audio materials such as sound stories; developing students' ability to design and carry out musical activities based on audition; developing and strengthening teamwork as a learned competence, in creating an educational product that uses various information technology and communication means. Last but not least, developing creativity and imagination in students is another major objective of this study. To achieve these objectives, we decided to use Audacity, an open source audio editing and recording software, as well as other forms of communication, throughout the first semester of the academic year 2014-2015. Our work undertaken during the 14 weeks of academic training has shown that Audacity is an extremely useful tool in creating new means that make audio-based listening activities much easier. In addition, combining several software to create integrated activities has enabled students to openly express their creativity in a variety of ways, both individually and as groups.

Keywords: musical education, audacity software, sound story, information and communication technologies, integrated activities, primary and pre-school education.

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1. INTRODUCTION

The Pedagogy of Primary and Pre-school Education is one of the specializations offered by the Faculty of Psychology and Education Sciences at Babeş-Bolyai University. The faculty subsidiary in Sibiu also offers courses in German, where students get in touch with *Music Education* as a discipline in two successive semesters, that is the 4th semester and the 5th semester respectively. In the first semester, in order to make students familiar with the notions of musical theory, we decided to use MuseScore, a music publishing program and notation software whose utility and efficiency has already been proven in practice, as well as by conducting a study² during the academic year 2014-2015. The music course taught during the second semester is optional and aims at consolidating the contents and notions, as well as improving the skills acquired in the previous semester.

Thus, in addition to the *MuseScore* program, we planned to introduce other musical software that would make it easier for students to design the lesson plans for their musical activities. Moreover, a series of discussions we had with students revealed that these activities are largely based on learning songs and singing them with children, the rest of the content in the curriculum being too little or not at all capitalized. This is due to the fact that the song is a much easier method to use and can be considered by some as actual content (even if erroneously), which sometimes makes the main objective – and often the only objective- of Musical Education to be the building of musical performing skills. This makes it very likely that children, both in kindergarten and in primary school, are deprived of auditory education and learning, which is, in fact, the first major objective mentioned in the curriculum.

The first framework-objective in the Curriculum for kindergarten³ is **building the ability to perceive the world of sounds and music**. This is associated with a series of other objectives of reference: discovering the world and the environment by hearing; differentiating between the tone colours of sounds in the immediate environment and of musical sounds; differentiating between the various intensities of sounds in the environment and the musical sounds. Among other objectives of reference we can mention audibly distinguishing the determined duration of sounds in the environment and of musical sounds, as well as audibly differentiating the pitch of musical sounds.

² Diana Todea, *The Use of the MuseScore Software in Musical E-learning*, International Conference on Virtual Learning, a Universităţii din Bucureşti, 2015, p. 88-94 (<https://www.scribd.com/doc/286449807/Proceedings-of-ICVL-2015-ISSN-1844-8933-ISI-Proceedings>).

³ Ministerul Educaţiei, Cercetării şi Tineretului [Ministry of Education, Research and Youth], *Curriculum pentru învăţământul preşcolar [Pre-school Education Curriculum]*, 2008, p. 32-33.

The framework objective of building the ability to perceive the world of sounds and music in children can be also found in the curriculum⁴ of Music and Movement for grades 0 to II as a general competence, that is **learning children's songs and simple elements of musical language**, as well as skills that are specific to Music as a discipline. Some of these skills are listed as follows: 1.1. Perceiving sounds of contrasting durations and intensities from the environment (grade 0); 1.1. Perceiving sounds of contrasting durations, intensities and speed, from the environment and from nature (1st grade); 1.1 Perceiving sounds of various durations, intensities, pitch and contrasting successions, from different sources (2nd grade).

Given the above considerations, by implementing this optional taught course we sought to make students who were actually training to become future teachers and educators, aware of the importance of children's auditory education. Another important objective we intended to achieve on this occasion is to initiate students in the use of free open sources that would facilitate and support a more effective and creative design of musical activities.

In order to discover a software that would allow us to attain the objectives we pursued throughout the research, we made a thorough survey that eventually led us to **Audacity**, a free, open-source, cross-platform audio software for multi-track recording and editing. According to Wikipedia⁵, based on the suggestions received from within the educational sector in 2008, the developers of Audacity committed themselves to adapt the software in order to make it easier for students to use it in their academic activities. Among the feedbacks received from various educational establishments by the creators of Audacity, we found that "Veritas - Escuela de Cine & TV / San José" in Costa Rica was using the freeware (version 1.3.5) in:

"Sound Techniques I & II" courses to introduce students to digital editing applications. The advantage is that students can use the application both at school and at home due to the free license and simplicity of installation. Using Audacity only, students have to create a "sonorama" where they tell an acoustic story.⁶

Moreover, on <https://kerileebeasley.com/2009/04/08/10-great-ways-to-use-audacity-with-your-students/>, among the 10 great ways to use Audacity

⁴ Ministerul Educației Naționale [Ministry of National Education], *Programa școlară pentru MUZICĂ ȘI MIȘCARE. Clasa pregătitoare, clasa I și clasa a II-a [School Curriculum for Music and Movement. Preparatory Class, 1st and IInd grades]*, 2013, p. 3-4.

⁵ <https://opensource.com/life/14/10/how-clean-digital-recordings-using-audacity> (accesată în 2.09.2016).

⁶ *Idem*.

with students we found that activity 6 consisted of "creating sound stories for images using free sound effects websites." By including Audacity in our present study, we have pursued the following objectives: 1) effective use of the software to create novel audio means like sound stories; 2) developing students' ability to effectively design musical lesson plans and conduct musical activities based on audition; 3) developing and enhancing students' teamwork skills in creating an educational product by making use of various computer-based and communication means; 4) developing students' creativity and imagination.

2. METHOD

2.1. Participants

This research was carried out with students in the 3rd year of study, with a specialization in the Pedagogy of Primary and Pre-school Education, having German as language of instruction, at the Sibiu subsidiary of the Faculty of Psychology and Education Sciences of Babeş-Bolyai University of Cluj-Napoca. The experimental group was made up of 13 students out of a total of 15 (two of them were awarded a mobility scholarship in Germany). In a first stage, we set up two groups:

- Group 1 "Kindergarten", consisting of 6 students
- Group 2 "School" (grades 0 to IV), consisting of 7 students.

The groups were divided based on the experience of each student in the field of teaching, as main criterion, given the fact that some of them have already been working as primary or pre-school teachers for many years, while others intended to choose one of the two specializations in the future. After determining the composition of each group, we decided to reverse the roles, which meant that the students who expressed their interest in working as a primary school teacher made up group 1 "Kindergarten", and those who opted for kindergarten made up group 2, "School". We deliberately chose to reverse the roles for each group, with a view to give students the opportunity to get in touch with all the contents of *Musical Education* as a discipline, even with those they do not encounter often in practice. This was intended precisely to make students aware of the need and importance of ensuring continuity in teaching music both in pre-schools and primary schools. Being a senior lecturer in this discipline, I was directly involved in all activities both as a researcher and as an active participant in the study.

2.2. Procedure

The research was carried out during the first semester of the academic year 2015-2016. The activities unfolded over 14 weeks, each activity consisting of 2 hours of taught course and 1 our tutorial class. The language of teaching was Romanian. To achieve the proposed objectives, we conducted a multi-stage experiment, as follows:

Stage I. The Initial Testing. During the second semester of the academic year of 2014-2015, within the taught course and tutorial class activities of *Musical Education and Teaching Methods for Music*, students having German as language of instruction became more familiar with the main means of achieving *musical education*, namely the *song*, the *music game* and the *audition*. In order to continue developing and strengthening the theoretical notions related to audition, we decided to undertake a series of parallel activities that would focus on the following aspects:

- familiarisation with the symphony orchestra and the sounds of its instruments;
- familiarisation with the percussion musical instruments and with the manner in which they can be used as toy-instruments;
- increasing students' awareness of the importance of developing musical ear in children by consciously listening to sounds from the environment.

This last activity was initially based on the analysis we made with the students of the contents in the curriculum of *Music* for kindergarten and school. After thoroughly analysing them, we have come to the conclusion that, according to these contents and their main stated objectives,, *auditions* should have as much importance as *songs* and *musical games* do, in the developing and training of musical skills in children. Subsequent to this phase, three types of practical auditions were held, as follows:

1. identifying, based on the audition, of different sounds and their sources, as well as writing down their names. In order to properly conduct this type of activity, we decided to use two main categories of sounds: a) sounds made by domestic animals, wild animals and birds; b) Sounds produced by land, air and sea transportation vehicles. The purpose of this activity was to make the students aware of what it takes to achieve the objective in the curriculum stating that children should be able to "differentiate between the tone colours of sounds in the immediate environment and of musical sounds."⁷

⁷ Ministerul Educației Cercetării și Tineretului [Ministry of Education, Research and Youth], *Curriculum pentru învățământul preșcolar [Curriculum for Pre-school Education]*, 2008, p. 33.

2. identifying the pitch of sounds made by animals (high or low)⁸ and the ascending or descending flow of onomatopoeia, as well as the duration of these sounds. The purpose of this activity was to make students aware of what is required from children in the intuitive learning of high and low sounds. Also, through this activity we aimed at achieving the related objectives stating that children should be able to "audibly differentiate between the different pitch of musical sounds⁹" and to "perceive sounds of contrasting durations, intensities and speed, from the environment and from nature¹⁰".

3. identifying the narrative thread of a sound story. The purpose of this activity was to develop students' ability to listen carefully to the audition material and to make them aware of the possibilities of capitalizing on environmental sounds in performing *Musical* activities.

Stage II. Selecting and Designing Materials to Create Sound Stories

This phase was carried out over a period of two weeks and resulted in two distinct activities. The first consisted in *choosing two stories*, one for school and one for kindergarten children. In this respect, we made available two bibliographic sources for the students:

1. *Poveștile mele preferate. O carte extraordinară cu jocuri [My Favourite Stories. An Extraordinary Book of Games]*, Editura Corint Junior, București, 2008.

2. *Mica Sirenă și alte povești mult îndrăgite [The Little Mermaid and Other Beloved Stories. An Extraordinary Book of Games]*, Editura Corint Junior, București, 2008.

The "School" group chose the story "Rapunzel" from the first collection of stories, whereas the "Kindergarten" group chose "The Little Mermaid" from the second collection. Nonetheless, although the first option of the "Kindergarten" group was "Beauty and the beast", after thorough analysis and brainstorming, it was found to be too complicated for the level of understanding of children in upper preschool groups. Also, in order to facilitate the understanding of the story and to avoid to negatively affect the children emotionally, we decided to change the end of the story "The Little Mermaid."¹¹

⁸ In performing this activity, we used the same animals and sounds as in the previous activity.

⁹ Ministerul Educației Cercetării și Tineretului [Ministry of Education, Research and Youth], *Curriculum pentru învățământul preșcolar [Curriculum for Pre-school Education]*, 2008, p. 33.

¹⁰ Ministerul Educației Naționale [Ministry of National Education], *Programa școlară pentru MUZICĂ ȘI MIȘCARE. Clasa pregătitoare, clasa I și clasa a II-a [School Curriculum for Music and Movement. Preparatory Class, 1st and 2nd grades]*, 2013, p. 4.

¹¹ In the adapted version, the story ends with the wedding of the Prince to the Little Mermaid, whereas in the original story, the little mermaid dies.

The second activity consisted of *Creating the story planner spreadsheet*. To be able to carry out this activity, students were given a table structure (**E.g.1**) which they had to complete with a series of data:

E.g. 1

The story	Words that suggest: - Framework of the story plot - Time - Characters - Plot of the story	Sounds (that can be associated with keywords)
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Structure of the Story Planner Spreadsheet

The purpose of the two activities was to develop students' imagination and creativity by making available a material with a new work structure to them, to operate with and which would also develop their ability to work in teams. Carrying out this stage involved systematic observation on behalf of the students and the resulting findings were noted in an observation record.

Stage III. Using Audacity to Create Sound Stories

This phase was run over 10 weeks and involved 4 extensive activities:

1. *Selecting sounds on Youtube* (2 weeks). After completing the *Story planner spreadsheets* and setting the sounds corresponding to the keywords, the tasks were distributed to students, each student being handed out a part of the story, and the task of selecting the corresponding sounds.

2. First, the distribution was made in the *planner spreadsheet*, in the Stories section, by attributing code numbers for each part of the story (e.g. 2), based on which each group subsequently created a document containing tasks assigned to each student. Youtube was the source chosen for the selection of sounds, while for downloading and processing the audio-video materials, we chose Youtube Downloader and Youtube to mp3 Converter (<http://www.youtube-mp3.org/>).

3. *Getting started with Audacity and learning the methods of processing sounds* (4 weeks). First, students learned that from the downloaded material from Youtube they were to select and save (using *Audacity*) only those sounds or musical parts that served them in creating their stories. Subsequently, after creating and saving the sound material they wanted to use, we moved to the next step, that was becoming familiar with various *Effects* options of the program, such as: *Echo; Amplify; Change Speed; Change Tempo; Fade In; Fade Out* or *Repeat*.

Since *Audacity* is a free open source, we were able to download the software on the existing laptops belonging to the department. Afterwards, each student was required to install it on their laptop or personal computer. By performing this step, we intended to improve the students' skills in using *Audacity* both at home and during the tutorial classes, so that the material that was created by students individually be further refined and perfected during the course.

4. *Composing the songs* (2 weeks) and posting them on Youtube. In creating "*The Song of Rapunzel*" and the other one, entitled "*The Little Mermaid and the Prince*", we performed the following steps:

- determining the specific sequence in the unfolding of the story which the song will be associated to.
- creating the text and versifying it.
- adapting the versification to the musical rhythm; determining the beat.
- composing the melody of the song using the *Piano* mobile app (version 3.3.6 by Peter Nagy).
- editing the two songs mentioned above using the *MuseScore* software.
- exporting the songs.
- uploading the songs onto Youtube.

The purpose of this fourth activity was to develop creativity in students, to put them in the position of composers and thus to boost their natural curiosity and stimulate them to improve their theoretical and musical knowledge.

5. *Linking sounds and songs in the story using Audacity and posting them on Youtube* (2 weeks). This activity was carried out collectively and was performed during the tutorial classes. Each group had the task of linking all the sequences they created individually, as well as the songs they composed and integrate them into the story.

At this stage of the research, we have first systematically observed and noted in an Observation Sheet the degree of improvement in students' numerical skills when using *Audacity* and other software like *MuseScore*, *Youtube*, *Youtube Downloader*, *Youtube to mp3 Converter* and the *Piano* application. To complete this stage, we have then carried out the content analysis of the two *Sound Stories*. In this analysis, we have focused on the logic of linking the sounds in the story, using the *story planner spreadsheets* as control tools.

Stage IV. Creating Integrated Lesson Plans Using the Computer and Other Communication Tools

The last two weeks of this research project have been dedicated to creating an integrated lesson plans by each group, based on the broader theme of "*Children's Tales*", having as subject the "Perceiving of Sounds from the Environment."

The lesson plans were designed for the second grade (school) and for the upper preschool group (kindergarten). These plans were focused on the contents provided in the curriculum for the school disciplines *Music and Movement*, *Language and Communication*, as well as *Visual Arts and Practical Activities*, whereas for kindergarten, the domains concerned were *Aesthetics and Creative Activities*, but also *Language and Communication*.

At this stage of the research, we focused on students' developing their competences for more easily designing integrated lesson plans through the use of innovative educational materials, created with the help of *Audacity* and other IT and communication tools.

At the end of this fourth stage, each student had to take an oral exam, by drawing lots of a phase in the lesson plan. By implementing this step in our research we intended to involve each student in the creation of the musical activity as actively as possible, but also to develop and enhance their oral communication competence.

3. RESULTS

The final products of this study consist in the two sound stories created with the help of *Audacity* and other computer and communication tools, and two integrated lesson plans and presentations. The resulting materials were as follows:

- 2 story planner spreadsheets for the stories "Rapunzel" and "The Little Mermaid" (2nd example).

- 2 documents comprising the sharing of the corresponding sounds for each part of the story, between the participating students.
- 2 songs (text, rhythm and melody) created and edited in *MuseScore* (3rd example).

E.g. 3

Rapunzel

J = 60

Cât am stat sin - gură - ntum Au tre - cut zi - le fă - ră - rost A - tă - ția ani de - gea - ba,
cât de oar - b - am fost! Cum a - ra - tă ce - e ru - ul va ra, cum se - aud gă - â - ze - le sea - ra?
eu aș - tept cu ne - răb - da - re să mă duc la o - o pli - im - ba re!

Musical score for the “Rapunzel” song

E.g. 4

Mica Sirena

J = 60

Te-am va - zut, mi-ai plă - cut, ce ră - mă - ne de fă - cut?
eu si - re - nă, tu băr - but, eu în a - pă, tu pe - uscat.
Po - ves - te, po - ves - te, oh, ce vis fru mos!
M-ai vă - zut, M-ai plă - cut, nun - tă noi am fă - cut,
Mă iu - bești, te iu - besc, veș - nic cu ti - ne - o - să tră - iesc!

Musical score of the song “Little Mermaid and the Prince”

- 2 uploads on Youtube consisting of the songs (score and sound) created by the two teams:

- “The Song of Rapunzel”



<https://www.youtube.com/watch?v=E53x-ZC8W0M>

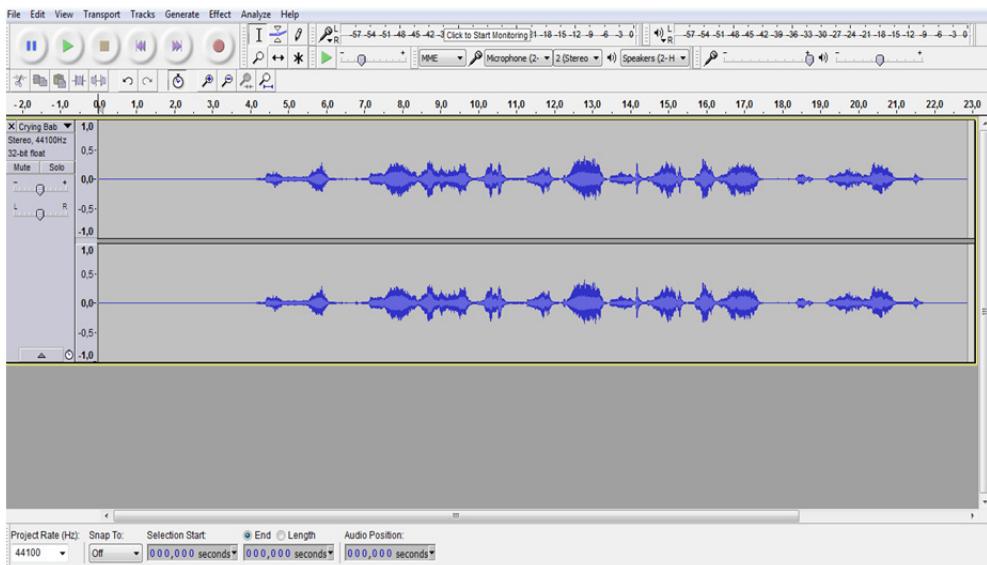
- “The Little Mermaid and the Prince



<https://www.youtube.com/watch?v=KWA5jkiZSt0>

- 13 tasks of processing sounds selected from Youtube (5th example);

E.g. 5



Editing page in Audacity

- 2 sound stories created and uploaded to Youtube (audio material)
- **The "Rapunzel" sound story**



<https://www.youtube.com/watch?v=AvLuIUye79s&t=33s>

- **The "Little Mermaid" sound story**



<https://www.youtube.com/watch?v=rxwvvA2YpfE&t=16s>

- 2 integrated lesson plans, one for school (2nd grade) and one for kindergarten (upper preschool group)

4. DISCUSSIONS AND CONCLUSIONS

Analysis of the Initial Testing

Activity 1. Based on the notes taken by each student, we have created a summary record that revealed the fact that students only perceive and have knowledge of the sounds they hear frequently, and cannot distinguish, for example, between the sound of an ambulance and that of a fire engine.

Activity 2. This activity was conducted in oral form and the results were registered in a summary record that revealed the fact that students find it difficult to identify a low sound from a pitch sound, while identifying ascending or descending sounds made my animals becomes almost impossible. Instead, it has been much easier for students to recognize the duration of onomatopoeia production.

Activity 3. To accomplish this activity, we used a story that was made up only of sounds (<https://www.youtube.com/watch?v=7-7eekV9gPc>) and at the end of the audition, each student narrated the version they have imagined. The results we registered in a summary record revealed that the creative and imaginative side of students was being less capitalised and stimulated, which undoubtedly also influences the process of designing a more diverse range of *musical education* lesson plans in general and specifically, of lesson plans that would be based more on auditions.

Analysis of the Effectiveness of Using Audacity and Other Web Sources

Although the internet nowadays offers a large variety of teaching materials, teachers often do not appeal to such means in creating their educational activities. In the case of music, nonetheless, it is essential that music teachers know how to operate with web sources and select their most appropriate and varied musical examples in order to develop in children a keen eye for beauty and art (either musical or in any other form) from a very young age, as much as possible.

In the case of our experiment, using the *story planner spreadsheet* in the first stage of the research helped the students to be creative in transferring the story data and its action into words with sound effect. Subsequently, the words were introduced into the search engine of Youtube, which was not a novelty and did not involve any difficulty for any of the students. Instead, downloading the sounds and converting them to an *Audacity*-compatible format was more demanding, most students not knowing how to use the *Youtube Downloader* and the *Youtube to mp3 Converter*.

Thus, we have found that although the *Youtube* website is known and heavily accessed by everyone, the use of the materials that can be found here, in the classroom, when teaching *music* to children, is hampered by the fact that teachers seldom know of the other web sources and programs that would enable them to download and then play the recordings through the technical means their school can usually offer (CD player, computer), although, in many cases, the internet connection is missing.

On the other hand, the use of audio materials from the *Youtube* channel is often difficult due to the fact that some music recordings are very long. Or, more often than not, the teacher only needs a small musical fragment or musical examples that combine various sounds. In this respect, *Audacity* has proven to be extremely effective in our experiment, and students have learned how to select only smaller fragments from a large audio material, how to combine them and how to process them by adding various sound effects.

The Analysis of the Content in the Sound Stories was based on three criteria:

1) *Editing the musical parts.* *Audacity* has proven to be effective and easy to use by each student, in cropping only certain sounds from a larger audio material, as well as in linking them into smaller fragments.

2) *Editing the songs.* The fact that in the previous academic year (2014-2015) we have introduced students to *MuseScore*, a musical editing program, proved to be useful in composing the two songs: the "Song of Rapuzel and" The Little Mermaid and the Prince.

In addition, the use of the *Piano* mobile application enabled the participating students to test first many melodic lines until they managed to reach the final musical version of each song. This was very helpful to the students in developing their theoretical-musical notions, as well as the ability to associate the musical notation with the piano keys and, by that, this stage also enabled them to play an instrument, even if only virtually. Also, the obvious restraint at first made way to natural curiosity so that the composition process proved to be pleasant and very creative in the end.

3) *Linking sounds and songs in the story*. This was a rather difficult task because it implied the creation of a rather large material (in terms of length and time). Moreover, its difficulty lies in the fact that each fragment of audio material created individually had to be perfectly linked to the next, from the perspective of audio and narrative fluency. One of the issues that emerged at this stage was the difference in volume between the sound tracks that were edited individually and that were supposed to be linked with each other, but this problem was easily addressed using the *Amplify* option of *Audacity*.

Another finding was that, although the stories we created had a certain fluency when linking the parts together, creating sound stories whose action would be easy to infer only by calling on children's imagination, takes a little more longer to exercise in order to ensure greater ease in using *Audacity*.

The Analysis of the Lesson Plans

This stage was performed taking into consideration two aspects: 1) the manner of their design and 2) the degree of practicality of their content. This particular sequence of our research, focused on the actual design and construction of a lesson plan for *musical education* as a discipline was quite difficult, since it was obvious that the ability of drawing up a real musical activity on a given subject, taking into account the interdisciplinary aspects of integrated education was very little developed in students.

The fact that we used sound stories as the main means of achieving the objectives of this research has greatly facilitated the approach of integrated design of the lesson plans, simply by the fact that the educational product we created connects the narrative of the story with sounds and the visual imagination, as well as words/language with music and the visual arts.

The oral presentation of the lesson plans was made in the presence of all persons involved in the study. The fact that each student took an active part in the designing of the sound stories and of the lesson plans associated to these stories, gave the girls more confidence in delivering the presentation of their individual contribution to the project, most of them evolving very well during the research and beyond it.¹²

¹² Eight students got a score of 10/10, while five students got a score of 9/10.

The undertaking of this experiment demonstrated that the efficient use of *Audacity*, along with other information technology and communication tools has greatly contributed to the creation of novel audio materials such as sound stories. *Audacity* also provided support in developing students' ability to design and implement audition-based musical activities, as well as in fostering and strengthening students' creativity and imagination, and last, but not least, their teamworking skills in creating products that make use of various modern computer and communication means.

REFERENCES

- Ministerul Educației Cercetării și Tineretului, *Curriculum pentru învățământul preșcolar* [Ministry of Education, Research and Youth, *Pre-school Education Curriculum*], 2008.
- Ministerul Educației Naționale, *Programa școlară pentru Muzică și Mișcare. Clasa pregătitoare, clasa I și clasa a II-a* [Ministry of National Education, *School Curriculum for Music and Movement. Preparatory Class, 1st and 2nd grades*], 2013.
- *** *Poveștile mele preferate. O carte extraordinară cu jocuri* [My Favourite Stories. An Extraordinary Book of Games], Editura Corint Junior, București, 2008.
- *** *Mica Sirenă și alte povești mult îndrăgite. O carte extraordinară cu jocuri* [The Little Mermaid and Other Beloved Stories. An Extraordinary Book of Games], Editura Corint Junior, București, 2008.

Articles:

- Todea, Diana, *The Use of the MuseScore Software in Musical E-Learning*, International Conference on Virtual Learning, a Universității din București, 2015, p. 88-94.

Online sources:

- <https://opensource.com/life/14/10/how-clean-digital-recordings-using-audacity> (2.09.2016)
- <https://kerileebeasley.com/2009/04/08/10-great-ways-to-use-audacity-with-your-students/> (10.08.2016)
- <http://oss-watch.ac.uk/resources/ossoptionseducation> (9.06.2015)
- <https://www.youtube.com/watch?v=7-7eekV9gPc> (23.03.2014)
- <http://www.youtube-mp3.org/> (2.10.2015)