Development of Android-Based Social Stories in Teaching Social Behavior for Children with Autism

Novi Isniawati[✉], Siti Masitoh, and I. Ketut Budayasa

Universitas Negeri Surabaya, Surabaya, Indonesia
nova.21001@mhs.unesa.ac.id

Abstract. Children with autism have obstacles in social behavior. The application of media can be used for children with autism who have obstructions in social behavior and other children with special needs who have barriers in social behavior. This study aims to develop android-based social media stories which expected can build learning and feasibility about social behavior in children with autism. This study uses the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) development model. The model used is limited until the development stage because the purpose of this study is only limited to developing and producing a learning medium that is feasible to be implemented based on validator assessment. There were two validators in this study: material experts and media experts who are competent in their fields. The data used in this study is conducted in a questionnaire. The results of the material expert assessment obtained a percentage of 84.6% with a suitable category with a decent description requiring minor revisions. Meanwhile, the media expert assessment got a rate of 77.8%, which is a good category with a proper description requiring minor modifications.

Keywords: Social Stories · Android · Social Behavior · Children with Autism

1 Introduction

Humans are social beings who will constantly interact with society. Individuals interact with other individuals [1]. German explains that humans are social creatures who need to associate with others to meet their needs. Thus, humans are constantly faced with people and all things around them. Autistic children are also social beings who will live in society. According to Widajati [2], autism is a developmental disorder caused by disorders of the central nervous system, which cause disturbances in social interactions, communication, and behavior. Meanwhile, Ni'matuzahroh & Nurhamida stated that autism is a disorder that affects verbal, nonverbal, and social communication before the age of 3 years [3]. The impact of these symptoms is that children with autism experience obstacles in language and communication development, cannot interact with other people and peers, and their social skills do not develop like other children, normal children their age [4].

Living in society requires humans to behave under social norms. Social behavior is a person's behavior in relationships between individuals (with others) and between individuals with himself that can be seen and observed in everyday life [5]. Suppose a person's social behavior is not under the standards or rules that exist in society. In that case, his presence is considered disturbing, so he is not accepted or even ostracized. Thus, it is essential to teach social behavior to children with autism so that children can be well-received in society.

The social behavior of children with autism is different from children in general. According to Ulfah & Budiyanto [6], autistic children tend to be different from normal children in social behavior. Children with autism experience language, communication, and social interaction disorders because children with autism experience language disorders, which automatically causes children to experience communication difficulties. And also, social interaction. The signs shown by autistic children due to these disorders are that children with autism tend to be alone, avoid contact with other people, and are busier with inanimate objects or their favorite toys [7].

Concerning the development of social behavior for people with autism, Learner suggests that several initial programs must be carried out, namely (a) providing direction and guidance to develop positive habits and build self-perception in everyday life, (b) providing training and guidance to establish and maintain social interactions, (c) provide training and awareness guidance on alternative communication, (d) provide sensitivity-oriented exercises to other people's objects or particular objects, and (e) direct children face-to-face (picture of faces) using focused images or media. Thus, a strategy is needed that can develop the social behavior of autistic children.

Helping individuals understand a small part of their social world and learn how others behave in certain situations. Revealed that social stories are short stories that describe problems, concepts, and social skills designed to improve the quality or quantify social interactions individually [8]. Every social story provides clear, concise, and accurate information about what happens in a particular social problem, outlining why and what the response is. Thus, the social behavior that appears can follow the situation that occurs.

The development of technology is increasing day by day. Moreover, communication and information technology are developing quickly in the millennial era. Cell phones or cell phones are one of the technologies widely owned by the community. Most people become dependent on cell phones because a cell phone can benefit from being equipped with an internet network and various other features. Its simple, practical form makes the cellphone easy to carry everywhere.

Based on the problems and technological developments, it is essential for media that can support and improve the social behavior of children with autism. According to [8], social stories include interventions that can increase social interaction in children with autism. In addition, Padilla stated that technology-based social levels promote positive behavior and better communication than paper-based social stories. Using android-based technology can be easily applied by parents and teachers.

Social stories were developed by an android-based system that contains social stories. Mentioned that autistic children could more easily understand objects using visual and audio media [9]. Android-based social media stories combine technology and education, which contain social accounts related to social behavior and are equipped with attractive

images and audio. It is essential to develop social stories because using Android-based social levels in schools and institutions still needs to improve. Most of the social stories applied are still paper-based. In this regard, it is deemed appropriate to create Android-based social media stories to teach social behavior to children with autism. The social media stories development is using Android version 4. 4 Kitkats. Thus, the formulation of this study's problem is the development process of Android-based social media stories and their feasibility in teaching social behavior in children with autism. This research aims to describe the process of developing Android-based social media stories and determine its feasibility in teaching social behavior to children with autism.

2   Method

This study uses the development of Research and Development (RnD) with the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). Research on the development of the ADDIE model only until the Development stage because the purpose of this research was only to develop and produce a learning media that was feasible to be implemented based on the validator's assessment. This model provides an organized process for developing h face-to-face and online learning materials. This study uses quantitative data from material and media experts' validation. Validation in this research is material expert and media expert. A material expert is competent in social stories material and comes from a lecturer in the Department of the Special Education State University of Surabaya, who is also an expert in the Intervention course for Children with Autism. Media expert, competent in learning media development, including design and technical, comes from a lecturer in the Special Education State University of Surabaya Department. The instrument used was a material expert validation questionnaire and a media expert questionnaire. There is a set of questions or a written statement for the respondent to answer. There is a set of questions or written information for the respondent to answer. Data analysis techniques test the resulting product's feasibility through a percentage scale [10]. By using the formula:

$$P = \frac{f}{n} \times 100\%$$

Information:
P = Percentage of eligibility (%)
f = Score obtained
n = Total maximum score.

This meaning to the percentage figures as a result of calculations using the above formula, and then the assessment results are compared with the product eligibility criteria (Table 1).

3   Result and Discussion

3.1   Result

This study resulted in an Android-based social stories media product aimed at teaching social behavior to autistic children with barriers to learning communication, social interaction, and behavior. The following are the stages in developing social media stories:

Table 1. Questionnaire Assessment Criteria

Score	Criteria	Information
86%–100%	Very good	Very decent, no revision
66%–85%	Well	The descent requires minor revision
56%–65%	Not enough	Not feasible; requires heavy revision
0%–55%	Very less	Very unfit, requires heavy revision

1) The Process of Developing Android-Based Social Stories in Teaching Autistic Children's Social Behavior

The development process begins with conducting an analysis. At the analysis stage, namely analyzing students to determine teaching materials, achievement standards, and the media used. The analysis step goes through two phases, namely the first performance analysis to identify and clarify the problems encountered and produce solutions in the form of implementing learning programs or improving management. The second is a needs analysis to determine the abilities or competencies that students need to learn to enhance their skills or learning achievements. The development process conducts a direct review of the field using observation to find problems or obstacles experienced by children.

After doing the analysis, the next stage is the design stage. Designing is preparing a reference book discussing learning media, social stories, androids, social behavior, and autistic children. Next, develop a concept map. And the most important thing is preparing the design of social media stories. There are several steps in preparing the plan for social media stories, namely determining the title of social accounts based on what social behavior children often encounter. In addition, pay attention to indicators of effective social behavior and aspects of social behavior. Thus, four titles of social stories were obtained: greeting other people, asking the teacher for help, helping to get books, and playing well with friends. The opinion of [11] states that several examples of effective social interactions include greeting, doing activities together, making eye contact, and speaking actively. That is also in line with the opinion of Suparno et al. [5], which states that the development of social behavior, in essence, is oriented towards efforts to be able to interact because the interaction is a fundamental activity and is made an essential part of human life. Next, the preparation of sentences for social stories and design in terms of supporting images and audio. In addition, the creation of the assessment instrument used to assess the social accounts will be developed is also carried out so that the results are genuinely valid. The instrument consists of a material expert validation instrument related to the material contained in social stories. And media expert validation instruments about the media to be made.

Meanwhile, at the development stage, the activity of translating design specifications into physical form, so that this activity produces prototypes of development products. Android-based social media story product has the first page as shown in Fig. 1, the start

Fig. 1. Homepage

Fig. 2. Start Page

page is shown in Fig. 2, the information page is in Fig. 3, the gender selection page is in Fig. 4, and the selection of the title for the social story page is shown in Fig. 5.

On the start page, there is a voice and an information icon. The information page containing the instructions for use is shown in Fig. 6, the purpose is shown in Fig. 7, and the developer profile is shown in Fig. 8. Voice can also be disabled if it is disturbing to the child or the user.

The child or the user chooses according to the gender on the title page. If a woman chooses a woman, and vice versa. So, the subject or actor in the social story will adjust.

There are four choices of titles for social stories. When you have selected a gender, it will display the title page of the social stories. Then the child or user can choose one of the titles in turn.

2) Material Expert Validation Results Against Android-Based Social Media Stories in Teaching Social Behavior to Autistic Children

The results of the percentage assessment of Android-based social media stories in teaching social behavior of autistic children in terms of material are shown in Graph 1. Based on the picture, the material aspect obtained 78.6%, which includes good criteria, and deserves a light revision. In the line, 83.3% was obtained, which had good standards,

Fig. 3. Information Page

Fig. 4. Gender page

Fig. 5. Social Stories Title Page

and deserved to require minor revisions as well. Meanwhile, in the implementation aspect, it gets 100% which is considered very good and feasible without revision.

The material aspect obtains good criteria because the material presented in social stories is appropriate and relevant to the learning objectives of social behavior to be achieved. In addition, the material is by the underlying aspects of social behavior. The
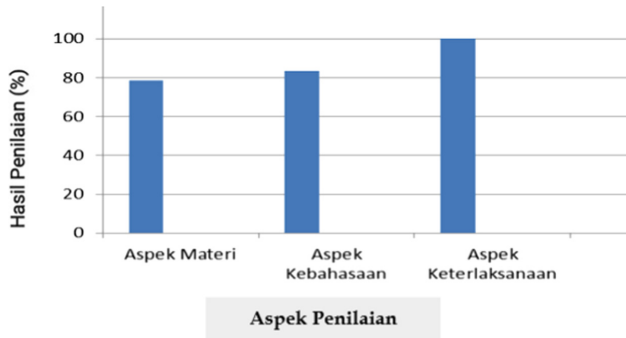
Fig. 6. Instructions Page
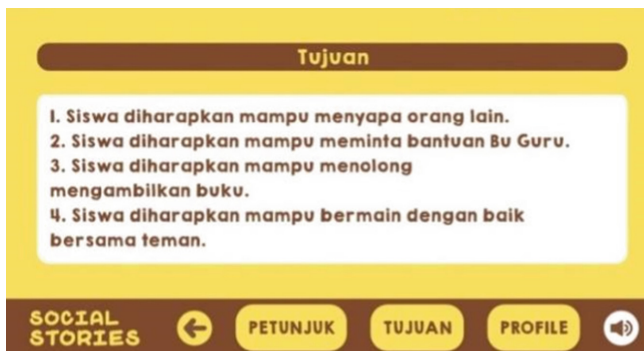
Fig. 7. Social Stories Destination Page

Fig. 8. Developer Profile Page

opinion of Suparno et al. [5]states that the development of social behavior, in essence, is oriented towards efforts to be able to interact because the interaction is a fundamental activity and is made an essential part of human life. According to Sarwono (2009), the

Graph 1. Percentage Results of Social Stories Media Assessment in material

aspects underlie social interaction are communication, attitudes, group behavior, and social norms. Thus, the material has an appropriate and clear flow and is systematic.

According to Karal and Wolfe [8], short stories describe situations, concepts, and social skills designed to improve the quality or quantity of an individual's social interaction. The linguistic aspect has good criteria because the language used in social stories is easy to understand and communicative. It affects the understanding of children in good social behavior. In addition, the term used is appropriate to the title of the social stories being taught.

The implementation aspect obtained excellent criteria by getting a perfect score. It is because the material presented can motivate children to learn. In addition, it can also attract children's interest in understanding social stories. It can also make children more active in doing learning activities.

3) Media Expert Validation Results Against Android-Based Social Media Stories in Teaching Social Behavior to Autistic Children

The percentage assessment of Android-based social media stories in teaching social behavior to autistic children in terms of media is shown in Graph 2. Based on the figure, the software engineering aspect obtained 79.5%, which includes good criteria worthy of minor revisions. Meanwhile, the element of visual communication, 75% of which is included in the suitable measures, also deserves a light revision.

The device engineering aspect received good criteria because this application clearly describes the program flow and provides icons that make it easier for users to operate social stories. The program flow is clear because each program image displayed is continuous and precise at every stage. The program flow begins by pressing the start button, continues with gender selection, then switches to selecting activity titles or social stories titles. Social story sentences appear one by one, as shown in Fig. 9. In terms of icons, they are also displayed clearly. Thus, making it easier for users to operate social stories. Icons in social stories can be seen in Fig. 9.

In addition, the application file size is manageable size, which is 16.95 MB. The application installation process is carried out efficiently. It does not require a supporting application to open it, and it is enough to send the application file to the user's cellphone,

Graph 2. Percentage Results of Social Stories Media Assessment in terms of media

Fig. 9. Social Stories Program Flow

then install the application in general. Once installed on the cellphone, users can directly open social stories. In addition, the application also has clear application instructions. So it can make it easier for users to operate it. The application also does not run slowly and does not cause the phone to hang (stop). The application can be run on android mobile, at least the android version of KitKat. In addition, the application also has clear application instructions. So it can make it easier for users to operate it. The application also does not run slowly and does not cause the phone to hang (stop). The application can be run on android mobile, at least the android version of KitKat. In addition, the application also has clear application instructions. So it can make it easier for users to operate it. The application also does not run slowly and does not cause the phone to hang (stop). The application can be run on android mobile, at least the android version of KitKat.

The visual communication aspect also has good criteria because the user can interact with the application, be creative in expressing ideas and ideas, and be precise in selecting images. The display used in the application is attractive. Notifications appear on display, and writing can begin by reading the application's correct choice of colors. In addition, the paper can be read clearly and by writing rules. The images displayed can be easily understood by children or users. The due to creating appropriate images that can describe

the sentence's contents. It is in line with the opinion of Syahidin & Milastri [12], which states that one of the functions of learning media is getting a clear picture of objects or things that are difficult to observe directly. All aspects of visual communication displayed in the application are clear and unbroken.

3.2 Discussion

Based on the results of research that has been carried out on the development of Android-based social media stories in teaching social behavior of autistic children, the data was obtained from material validation results and media validation by experts. The results of material validation by material experts obtained a percentage of 84.6%, included in the good criteria with appropriate information and requiring minor revisions. The material expert's revision of social media stories was initially no gender selection for the main character, then gender selection was added, as shown in Fig. 4. It is in line with the opinion of Susilana & Riyana [13], which states that learning media is a forum for messages learning it will be delivered to achieve learning objectives. Thus, making it easier for children and making children seem to be subjects in these activities. In addition, the words in social stories need a slight improvement, namely, being more concise and clearer. It is in line with the opinion of Balakrishnan & Alias [14], which state that social stories are brief descriptions of certain events or activities that inform the everyday situation. In addition, short sentences will also make it easier for children to understand the sentences conveyed. One of the characteristics of autistic children is the lack of flexibility in thinking and behaving [3].

The results of media validation by media experts obtained a percentage of 77.8% included, including the good criteria with correct information and requiring minor revisions. The media expert's revision of social media stories is that, according to the material expert, repetition and echoes are heard when each social story title is opened. The presence of repeated and echoing sounds will interfere with the concentration of autistic children. It is in line with the opinion of Hadith [15], which states that one of the learning patterns of autistic children is auditory learners. Namely, they like to talk, and it is easier to understand something that is heard than what is seen. So, it is fixed by eliminating the echoing sound so that children can easily understand it. And also, in the title asking the teacher for help, which describes the students asking the teacher for use, a sentence needs to explain the type of help the child asks the teacher. The initial sentence, "Please, teacher, please," is replaced with "Teacher, please help me write," as shown in Fig. 10. It is in line with the opinion of Susilana & Riyana [13], which states that one of the functions of the learning media is teaching and learning. put concrete foundations for thinking.

In addition, the sentences are adapted to the audio. Validation tests from material and media experts indicate that social media stories are suitable for use with revisions according to suggestions.

Fig. 10. Media Revision Results

4 Conclusion

The process of developing Android-based social media stories consists of three stages. The first stage of analysis is analyzing the problems and needs to determine the abilities and competencies that need to be taught. The two design stages are script writing and designing and making learning media. The three stages of development realize the design of learning media.

After validation by material experts, the assessment of Android-based social media stories obtained a percentage of 84.6%, including good criteria, feasible, and requiring minor revisions. Meanwhile, after being validated by media experts, the evaluation of Android-based social media stories obtained a percentage of 77.8%, criteria of good and decent, but requires a little revision.

Based on the results of the research that has been done, it is recommended that further researchers add activities related to social behavior. Thus, more exercises can be taught to children. Activities can be developed in the home or community environment. In addition, it is also possible to improve the audio in this media by capturing audio using more sophisticated tools. Thus, the resulting audio has a good quality. The media can also be adjusted again to the needs of the thinking level of autistic students and conduct limited trials and field tests on Android-based social media stories developed as learning because this research was only up to expert testing.

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