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Early Empathy: Impact of Digital Storytelling, Traditional-Storytelling, and Gender on Early Childhood

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ABSTRACT: Stories are good media for enhancing emotional intelligence and empathy. Therefore, early childhoods know how to empathize with the figure of the story through storytelling. This research objective is to investigate the impact of digital and traditional storytelling as a learning media and gender on empathy in early childhood. This research is experimental with treatment by level 2 x 2 research design. The data collection instrument uses an observation sheet in the form of an early childhood empathy Rating Scale. This research showed children who got the digital storytelling intervention had more empathy than children who got the traditional storytelling. Moreover, digital storytelling is more suitable for fostering empathy in the male gender compared with traditional storytelling. On the other hand, traditional storytelling is more suitable for enhancing empathy in the female gender.

Keywords: early childhood empathy, digital storytelling, traditional storytelling, gender

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1 INTRODUCTION

Early childhood education has a crucial part in optimizing aspects of early childhood development, one of which is the aspect of social-emotional development. This is stimulated by play as an essential role in childhood development (Robinson & Barrable, 2023). Moreover, research on empathy has explained there are positive interactions between interpersonal skills and sociability, and negative interactions with bullying and pugnaciousness (Berliner & Masterson, 2015). Early childhood interpersonal skills were predicted by some individual differences in neural function (Decety et al., 2018). In early childhood education settings, digital storytelling can potentially help develop children's academic and social skills (O'Byrne et al., 2018). On the other hand, it has been shown that constructive family relationships and supportive parenting impact early childhood morality and interpersonal tendencies positively. Positive relations with peers and close friends contribute to early moral development (Malti et al., 2015).

However, the reality shows that many children still lack a sense of empathy. This is obtained through interviews and preliminary observations conducted by researchers at kindergartens in Purwakarta found that some children cannot empathize with others, such as: laughing at friends who mistakenly answer the teacher's questions, teasing friends who are still shy when asked to sing, getting angry when someone gets praise from the teacher, and others. It is feared that there will be a bad impact if it continues, because according to (Van Noorden et al., 2015) that bullies lack or even have no empathy at all. Empathy has several aspects that can show that someone has high or less empathy, as for the aspects of empathy. Perspective-taking which means the capability to understand the perspective of others, fantasy is a change in individual imagination into thoughts, feelings, and actions. Empathy concern is a feeling of sympathy addressed to others when experiencing difficulties. Personal distress is a feeling that occurs in oneself such as anxiety when facing something (Davis, 1983).

The results of Vachon et al., (2014) research show that the development of children's empathy that is not optimal can increase aggressive behavior. In addition to this research, Findlay's research results suggest that the level of aggression of children who have high empathy is much lower when compared to children who have low empathy (Findlay et al., 2006). The interconnectivity of schools, parents, and students has a positive impact on the empathy development in young children (Mardliyah et al., 2020). In early childhood education, empathy has proven to be key in building relationships as a starting point in overcoming some key barriers. Social inclusion, access, participation, and community engagement are factors that support successful learning (Roberts, 2017).

Learning media is an intermediary in delivering educational messages that aim to bring children closer to the actual conditions. Research conducted by Siljivic, et al., (2022) provides new evidence that through digital storytelling with distinctive storyteller tone characteristics and story content is very effective in eliciting a person's empathetic response. A teacher's pedagogic ability to enhance children's learning motivation is achieved by allowing students to be vigorously through utilizing information and

communication technology tools to achieve the academic purpose, communicating effectively with children, and taking reflective behavior to support a good standard of learning (Winarto, 2019). One example of using technology-based media as learning media is interactive digital storytelling. In research conducted by Gomez et al., (2019) the utilization of digital storytelling as a learning media to increase empathy in early childhood can be done by presenting stories in the format of text, animation, graphics, and recorded audio narration.

According to Supeni (2014), empathy is influenced by several factors, one of which is gender. It is said that girls have a higher ability to empathize than boys. Meanwhile, in terms of emotional sensitivity, girls are also more sensitive than boys. This continues into adolescence. In terms of affective empathy, girls, compared to boys, demonstrate higher emotional responsiveness and match responses to others' trouble, as well as better emotion recognition capabilities. Relative to boys, girls also seem to engage in more emotional aspects during social cognition. Girls also tend to demonstrate more interpersonal, altruistic behavior, which supports the notion that affective empathy guides interpersonal behavior (Christov-Moore et al., 2014). Based on the above background, the study of early childhood empathy, interactive digital storytelling as a technology-based learning media, and gender distinction is important to research. This research investigates the impact of the interaction between digital storytelling, traditional storytelling, and gender on early childhood empathy.

2 THEORITICAL STUDY

2.1 *Empathy*

People could not have lived as a species if everybody only cared for themselves. Empathy is the interpersonal capability to eliminate self-centered behavior while focusing on the demand of the other, or the perception of the state of mind of another individual and the reflex emotional reaction to it or right and an effective reaction to another's condition than one's own (Hoffman, 2001). Moreover, empathy is explained as an individual's trying to know another individual's emotions and feelings (Hoffman, 2001), bringing through individuals to obtain an understanding of others via fantasy, observation, use of language, perspective-taking, and showing feelings (Lieber, 1995). Empathy has been conceptualized as comprising emotional and cognitive aspects since the 1980s.

M. H. Davis (1983) considered that empathy has 4 dimensions: perspective-taking, empathic concern, fantasy, and personal stress. On the other hand, Hoffman (1987) promotes a multidimensional approach and states that empathy involves universal and egocentric empathy, empathy for another's feelings, and empathy for another's life situation. In parallel, Damon (1988) explained that the growth of empathy consists of 4 levels: the first year of life period, toddler, preschool age, and school age. Preschool-age children should be able to empathize with the point of view of the person who experienced

the incident namely historical empathy (Ellenwood, 2017). The classical cognitive development approach explains that kindergarten students' empathy behavior has not yet developed. Nevertheless, the following study has suggested that this is a misapprehension, and that empathy growth starts in the early childhood period (McDonald & Messinger, 2012). The numerous concept of empathy shares a familiar topic of focusing on children's capability to know historical incidents through empathy and to utilize their historical thinking ability (Endacott & Brooks, 2013).

Empathy is the perceptual reaction that stems from the perception or awareness of another's emotional condition or situation. Furthermore, enables for knowing of what another individual is feeling or would be expected to feel (Eisenberg & Eggum, 2009). The experience of empathy is a strong self-tendency in daily social relations. It supports parenting and allows children to live in groups, in society, and community. Early childhood's ability to act emotionally to the happiness and sadness of others and to demonstrate empathic concern is shown in the time of the beginning of life (Davidov et al., 2013).

2.2 *Digital Storytelling*

Storytelling is generally a pedagogical method and can be utilized to enhance learning output. In the kindergarten, teachers utilized storybooks or puppets as tools in the storytelling approach. However, storytelling has now changed into digital storytelling that does not only rely on oral stories but is combined with music, animation, interactivity, and narration simultaneously, thus creating a diverse learning situation for children. Digital storytelling is a computer-based technology utilized to deliver a story to the audience in the format of text, animation, and audio; and allows us to be able to change the learning state in the design of stories packaged in digital format (Vrettakis, 2020). In addition, the utilization of digital storytelling allows children to live the story by the visualizations and audio supplied.

The process of developing digital stories with teachers allows them to grow empathy with students because they are allowed to share points of view and link on a universal emotional human degree. Show a part of teachers' lived experiences to the student, was seen to challenge the common stereotype that preserves the social stigma through utilizing digital stories. Including digital stories on teachers' lived experiences in school was thought to promote reflective action, dialogue, and knowing of the complexity and variety of the experience of existence (Rice et al., 2015).

Previous research by researchers from computer science, visual arts, film directing, psychology, and human-computer interaction, purposed to develop a new approach to the relationship between digital storytelling and cultural heritage presentation: hyper-storytelling. The researchers suggest their perception of the idea, structure, and part that digital storytelling needs to contain to reach an optimum level of user immersion and offer a great edutainment experience. This study explained the need to perspective digital storytelling as editorial content assembled based regulation of multiple professions, each

contributing in its way to the customary outcome. The future project of this group will include making the first digital storytelling application based on the established direction. That application will be assessed by user experience research and measured in its immersion and edutainment levels. Based on the results of this research the digital storytelling idea will be adjusted and finalized (Rizvic, S. et al., 2017).

2.3 *Gender*

According to Mansour Fakih, gender is a trait that is inherent in males and females. For instance, females are known as gentle, beautiful, emotional, or motherly. In comparison, males are considered strong, logical, male, and robust. Nature themselves are replaceable, and it means that men are emotional, soft, and maternal, contrary women are robust, logical, and mighty, split in the attributes of these characteristics can prevail from time after time and from place to place. On the other hand, gender stereotype is a cultural theory that attempts to make distinctions in gender stereotype is a cultural theory that seeks to make distinctions in terms of roles, behavior, mentality, and emotional traits between males and females that develop in the community of roles, behavior, mentality, and emotional traits between males and females that growth in the community (Umar, 2010).

When exploring questions about gender diversity in bashfulness and relational theory, the first question is whether the predominance or appearance of these cons' bashfulness traits between a male child and a female child. There has been a common shortage of significant gender diversity information in behavioral inhibition and bashfulness in 4 to 5 years old children and 6 to 9 years old children, as evaluated by observations, parental ratings, and teacher information based on prior research in Australia and the Netherlands (Bishop et al., 2003; Thijs et al., 2004). Sameness, female children are not more likely than male children to be nominated by their same-age friends as bashful or socially withdrawn. Of record, Else-Quest et al. (2006) conducted a meta-analysis of gender diversity in child temperament (including research from babyhood to teenager). For bashfulness, the mean weighted impact percentage was significantly different from nil ($p < .05$) and explained as "a little impact percentage favoring female girl". Some gender diversity does emerge to appear in older children. For instance, findings from some longitudinal research conducted in Norwegian with Mauritian samples explained that by late childhood, female children start to express a higher stage of behavioral inhibition than male children (Scarpa et al., 1995).

Furthermore, in late childhood and the beginning of teenage years, based on the research with the sample from Chinese, Canadian, Dutch, Indian, and Iranian female children tend to identify themselves as more bashful than male children of the same age (Chang, 2004; Findlay et al., 2009; Vervoort et al., 2010; Saberi & D'Souza, 2009). Moreover, the prior study conducted in German and Finnish suggests that it is likely that this gender diversity in late childhood can be partially described by the commencement of social phobia disorder which occurs most ordinariness during this age phase, for instance, teenage girls are more socially phobia than boys (Grant et al., 2005; Essau et al.,

1999; Kendall et al., 2006; Ranta et al., 2007). On the other hand, the research conducted in the United States and Germany explains women are approximately one point five to two times more likely to be diagnosed with social phobia disorder when getting mature, as compared to their male companions. The appearance of gender diversity in self-reports of bashfulness in the time of this age period may depict gender diversity in social anxiety as an effect of perspective overlap between bashfulness and social anxiety.

Alternatively, this appearance of gender diversity may be a result of an information bias in 10 to 12 years old children. For instance, female children may be more likely to express feelings of bashfulness because of the emerging crucial social acceptability like emotions for female children than for male children. Nevertheless, male children may be more likely to not report like feelings in the face of anticipated negative actions and reactions from others. In this point, the higher levels of bashfulness reported by females in 10 to 12 years old might be seen as potential support for a societal-level bias in the relative emerging bashfulness may also be partially considered by measurement concerns embroil recall biases. For instance, parent and teacher evaluations of child bashfulness is based on these individuals' straight observations of child action. If it is more socially compatible for female children than male children to show bashfulness behaviors, parents and teachers may more conveniently recall such "gender-stereotypical" behaviors between female children than male children.

In another opinion, there is new proof to explain that socially withdrawn behaviors between male children (as delivered using a hypothetical sketch) may become more prominent to friends of the same age in late childhood as compared to the same act among female children. We need to rely upon more "objective" assessments of bashfulness to avoid biases related to self and other reports. Nevertheless, observational assessment of bashfulness may be less valid as children grow older because their capability to self-regulate is developed in this period (McCabe et al., 2004). As a result, older children may feel bashfulness but be less likely to demonstrate bashfulness action. This may be particularly true of male children, who may better understand behavior to social compatibility as they rise older inclined that their capability to behaviorally self-regulate grows later in life when compared to female children (Matthews et al., 2009). There is no single biological or psychophysiological marker for bashfulness (Schmidt et al., 2005).

3 METHOD

3.1 *Research Design*

This study aspires to examine the impact of interactive digital storytelling, traditional storytelling, and gender on early childhood empathy. The research method used is the experimental method, with the research design using treatment by level 2x2 design. This research has three variables, namely digital storytelling (A1) and traditional storytelling (A2) as independent variables; male (B1) and female (B2) as attribute variables; and early childhood empathy as a dependent variable. The data collection instrument uses an

observation sheet in the form of an early childhood empathy Rating Scale. The data analysis technique used in this work is a two-way analysis of variance (ANOVA) technique.

3.2 Participant

The target population in this research was class A (4-5 years old) kindergarten students in Purwakarta-Jawa Barat, Indonesia. This research used a probability sampling technique conducted in two private kindergartens, TK Mentari which has digital storytelling, and TK Pasundan which has traditional storytelling (see Table 1).

Table 1. Sample Distribution by Treatment

	A1	A2	Number
B1	20	20	40
B2	20	20	40
Total	40	40	40

3.3 Instruments

The stories of the media in this research are produced from the dimension of empathy by Davis (1983), videlicet perspective taking, fantasy, empathy concern, and personal distress. Digital storytelling consists of four videos with 3-4 minutes duration for each video. On the other hand, traditional storytelling spends the same time as interactive digital storytelling for teachers to tell the story. Moreover, the story about the dimension of empathy is formed into an animation based on everyday life. Friends and family are the figures in digital storytelling that are used in this research because children are familiar with them, and it helps the children understand the dimension of empathy. The specifics of the story are described in the Table 2 and 3.

Table 2. The module of digital storytelling and traditional storytelling

Session	Stories
Perspective taking	Listen to people who talk to you
Fantasy	Share toys
Empathy concern	Helps others who need help
Personal distress	Forgive those who make mistakes for you

Table 3. Blueprint of Empathy Behavior Observation Table

Dimensions	Item Distribution	Percentage
Perspective taking	1,2,3,4,5	25%
Fantasy	6,7,8,9,10	25%
Empathy concern	11,12,13,14,15	25%
Personal distress	16,17,18,19,20	25%

4 RESULT AND DISCUSSION

4.1 Result

The result obtained is the impact of the intervention and gender on early childhood empathy. Hypothesis testing in this research obtained the main effect, interaction effect, and simple effect between independent and moderate variables on the dependent

variables. The measure is done using the Turkey Test Formula and the result can be seen in Table 4.

Table 4. Result of Analysis of Variance Measure by Two-Way Analysis of Variance

Source of Variance	Db	JK	RJK	F _{count}	F _{table}
Between Columns	1	915.282	915.282	18.86901858	4.20
Between Lines	1	1524.225	762.1125	15.71134898	3.30
Interaction	1	5459.899	2729.95	56.27934105	3.30
in	30	1455.214	48.50713		
Total Reduced	35	9771.639			

Based on the table above, there is a significant interaction between the two variables with the test criteria used in this research H_a if $F_a > F_t$. Then, the test is continued with the Duncan test to find which group's average is high in two pairs of data. The result of the Duncan test can be seen in Table 5.

Table 5. Duncan Test Calculation Result

Group	Deviation of average score	The score of Duncan's Rp test	Conclusion
A1B1-A2B1	36.8	9.1	Significant
A1B2-A2B2	25.1	8.63	Significant

4.2 Discussion

Storytelling is one of the first approaches to teaching and learning in kindergarten. For thousands of years, the community has understood key principles through storytelling. Propounding heroes who experience the same problem conditions as the audience, for instance, emotional and moral problems, can be an example of addressing human issues. Moreover, storytelling is a common means of supporting early childhood confrontation with life aspects, conditions, and social issues that will perhaps be dealt with in the time ahead and thus be prepared. Early childhood can obtain many advantages from storytelling, including helping early childhood stimulate their imagination, support early childhood experience, and enhance their focus. In addition, storytelling helps young children expand their vocabulary, develop their grasping power and social interaction skills, develop affective aspects, train to listen, present positive and negative morals, and foster their knowledge. Traditional storytelling and digital storytelling have an identical center of attention, namely as a storytelling approach that focuses on the aspects of a select topic or central focus for the story. In the transition from traditional storytelling to digital storytelling, there is an important difference between digital storytelling and traditional storytelling. Digital storytelling integrates a variety of digital multimedia elements, for instance mixture of graphics, text, recorded audio narration, and music to show information on a certain theme through the utilization of technology (Bower, 2015).

In early childhood education, especially in Indonesia, digital storytelling being a simple digital technology makes it easier for teachers to provide a fun, engaging, communicative and dramatic learning experience (Purnama et al., 2022). Based on this research result, it can identified that children who got the digital storytelling intervention had more empathy than children who got the traditional storytelling. The finding of this research is in line with past research conducted by Paiva (2005) and Hibbin (2016) that the utilization of

storytelling with audio-visual components (digital storytelling) is effective in fostering early childhood empathy ability. Over and above that, sharing stories with audiovisual tools can also practice permeation or the capability to grab the focus of early childhood, stimulate children's imagination, and design attractive conditions. This result also follows the study conducted by Garcia and Rossiter (in Robin, 2016) that the utilization of learning with digital storytelling in early childhood enhances empathy, perspective-taking, self-perception, and social building. In addition, based on Chan and Sage (2019), the digital storytelling approach can help foster children's development of empathy by stimulating their social behavior aspect.

However, research conducted by Halimah et al., (2020) shows that traditional storytelling activities through the learning media *Wayang Golek* stimulate important moral values in children including empathy. Research conducted by Catala et al., (2023) showed that robotic or digital and human or traditional use of stories did not differ significantly in performance tests but outperformed controls. In Harland's research, 2018 said that digital storytelling has the potential to affect real change in improving from a personal level to an organizational level, and perhaps even to a cultural level. Thompson (2014) said that everyone has a story in the formation of empathy including understanding each other's feelings through digital storytelling.

The second result of this research suggests there was an interaction between digital or traditional storytelling and gender to early childhood empathy. There is a reason why relationships among storytelling, gender, and early childhood empathy. Female children and male children may differ on overall levels of moral internalization. For instance, in young children, female children demonstrate a higher degree of guilt, empathy, and social-cognitive maturity, all of which have a theoretical link to moral development (Lin & Nichols, 2002). Furthermore, previous research explained that girls more empathize than boys, since the gender stereotype constructs the attributes or characteristics of boys and girls. Boys are raised to have strong emotions and be rigid, yet girls are raised always to understand other people's emotions for example, boys are expected to respond to problems rationally, and women are expected to respond emotionally while addressing the problem (Aprilliani, 2023)

The second result is supported by Johnson's (2012) research explains that storytelling is a common method for early childhood confrontation with life aspects, conditions, and social issues that they will the chances are deal with in the fullness of time and thus must be prepared. A few problems such as mental sensitivity, lack of compassion, less solidarity, less sympathy, and lack of empathy for our fellow man can be addressed by stories. The audience enters the stories, and experiences and understands how to empathize with others, through storytelling. Therefore, stories can be a good medium for enhancing emotional intelligence and empathy. Digital storytelling is more suitable for fostering empathy in the male gender compared with traditional storytelling, as a third result of this research. In contrast, traditional storytelling is more suitable for enhancing empathy in the female gender. The kindergarten is an institution where gender plays a

main role, be it in play, teaching, or other kindergarten routine. Mawson (2010) conducted research with a sample the children from New Zealand that suggests there is a transformation of the theory of the word 'technology' by 7 children ages five to ten. The female children have more difficulty adapting to technology compared to male children. It is uncertain reason why the female children found are difficult to adapt to the technology, but there is an argument, based on Mawson, that could be that the female children seemed to have a comprehensive, more contextualized perspective of technology. They seemed to view technology in a broader state than the questions they had to deal with in the research. On the contrary, the female children had a more limited idea in the logic that they did not see technology as designed to grasp new things to the same perception as the male children, while both genders have the same point that technology is creating the design to address the issue. In general, early childhood had positive behavior towards technology, particularly male children, but particularly the female children were ambivalent according to the value of technology for the community (Mawson 2010).

There was no significant correlation between gender and successful outcomes, but there was a correlation between frequent use of digital tools and successful achievement in lessons. Children need to be introduced to digital tools to enhance teaching and learning. They can help both girls and boys to accelerate, enrich and deepen their skills (Heindl & Nader, 2018). Gender behavior and preferences are also affecting student achievement in technology education (Mawson 2010). Female children and male children learn to approach and utilize technology in different ways, thereby asserting rather than abolishing gender boundaries. The female children more often have a specific aim in creating something they need in their play, that is, they mostly attach to technological development as a pretense. The male children, contrary, more frequently award technological development as a main part of their play; the development is an end. Additionally, the boys more frequently award the technological activities of creating and utilizing many things as a central part of their play (Hallstro'm, 2014). In sum, gender-related behavior concerning technology seems to be the most stereotypical in kindergarten children.

5 CONCLUSION

In conclusion, children who got the digital storytelling intervention had more empathy than children who got the traditional storytelling. Moreover, digital storytelling is more suitable for fostering empathy in the male gender compared with traditional storytelling. On the contrary, traditional storytelling is more suitable for enhancing empathy in the female gender. However, this research limited previous studies' sources that were systematically reviewed and included a small number with a wide scope of discussion. Future authors can attach various comprehensive past research such as Scopus, Science Direct, and Web of Science. Furthermore, future research can add another factor that influences early childhood empathy for example parenting style. Additionally, the participants of this research are children with an age range of four to five years old, and

it can be suggested for the next research to change the range of participation age with children with a range of 5-6 years old.

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