

L2 ASD Learners' Scaffolding Development after Long Interaction with The Mobile Story-Sharing Application

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Abstract

Scaffolding research has been widely investigated involving parent-child within the first language (L1) context without considering the cognitive issues and Intelligence Quotients (IQ) aspects as crucial precursors of the scaffolding process. This case study aims to find emergent themes and theorize potential scaffolding theory from the interaction of two-second language (L2) Autism Spectrum Disorder (ASD) children and normal parents with minimum English exposure, cognitive disorders, and different IQ levels on the mobile story-sharing application. Participant observations and in-depth interviews on scaffolding using story-sharing activities among children, parents, and researchers were conducted every week for six months. Thematic analysis was implemented inductively and interpreted by two experts to find the emerging variation of scaffolding theories. The results showed that ASD learners' scaffolding process involved more complex stages than the previous studies. The complexities of scaffolding involved repetitive recall, translating, imitating, cooperating, target and crises. ASD learners could write a simple phrase and short sentence after exhaustive efforts. Since ASD learners' previous vocabulary mastery was excluded, it is worth pursuing further researchers to examine learners' vocabulary and story writing development using the same application.

Keywords: ASD learner, scaffolding, interaction, mobile application, story-sharing

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1. Introduction

Scaffolding theory develops students' Zone Proximal Development (ZPD) through instructions (guides), encouragement, warning, problem-solving, giving examples, and activities enabling students to learn for themselves. This system supports the students learning process, making them get accustomed to problem-solving activities. Scaffolding theory comes from the social interaction theorist Vygotsky (1978), after analyzing social, cultural interaction. However, due to its significant influence, the theory was later developed for second language acquisition learning (Rogoff, B., & Gardner, 1984; Vygotsky, 1978). In this context, English learning is carried out using the social interaction model and scaffolding, prioritizing the interaction between the learners and subjects more qualified in English. Based on the benefit, the researchers began studying scaffolding, involving the children, teachers and parents' subject in the first language context. The subject comes from native English contexts with no difficulties in communication or using printed book media.

The scaffolding research was initially conducted on the L1 context between children, teachers and parents using the printed-book media, where the subject had English backgrounds. Therefore, they experienced no constraints in communicating using English and the research subjects involved normal children. Also, the children did not experience cognitive and lay language processes, such as autism that disrupted communication (Arifani et al., 2021; Baiza, 2018; Reuter-Lorenz & Park, 2014; Richardson & Norgate, 2014; Wang et al., 2016). The scaffolding theory positively impacts traditional interactions involving children, teachers, and parents using printed book media (Aram & Aviram, 2009; Aram & Shapira, 2012; Bruner, 1985; Huang et al., 2012; Neumann, 2020). Furthermore, information technology development has shifted printed book media into e-books and mobile applications.

Hence, scaffolding research also experienced a shift to examine the theory's potential between children, teachers, and parents with electronics stories, such as Our Story mobile applications. In line with previous studies, scaffolding research in the technology era did not experience rapid development. It happens because the research subject was still relatively the same as the subject in the classic era. Therefore, this study's contribution was only a variation (scaffolding theory) of media and subject differences. The scaffolding theory has contributed towards a traditional (printed book) and modern (Electronic Stories / Mobile Application Story) perspective. However, the implementation is limited to the first language context (L1) with a rich English exposure and no communication barriers on

subjects. Also, most subjects have no communication and cognitive constraints as well as IQ that affect scaffolding processes. Cognitive and IQ significantly influence language acquisition and production, affecting the scaffolding interaction process (Arifani et al., 2021). Therefore, this study filled the gap by examining the scaffolding theory potential in the EFL context. It was conducted on children and parents with poor English communication skills due to limited exposure in learning the language (only limited from the school), involving research subjects. The subjects comprised autistic children with cognitive and communication disorders and different IQs considered by experts' influence on scaffolding interactions (Ge & Land, 2003; Mermelshtine, 2017; Robinson et al., 2015; Stone, 1998). Hence, this study examines the scaffolding process of children and parents routinely learning English for more than one year using Story Application with different IQs. This enhances the evaluation of the scaffolding potential in the EFL context between the children and parents.

2. Literature Review

A literature review examining the connection development of scaffolding and technology quality has revealed Research Participants and Scaffolding Implementation.

The literature review in the first part is Research Participants involved in scaffolding from traditional (Printed book) to Modern (electronic and application stories). In the L1 context, research on scaffolding involved parents, children, teachers and traditional media (Printed books) during the last 15 years. The results show that the subjects involved do not experience cognitive and communication impairment because they are children without cognitive, brain function and communication disorders. Therefore, the scaffolding stages and process results are linear and short, including reading and open-end questions (Dawson, 2008; Joseph et al., 2002; Russo, 2004; Tubagus et al., 2020). Furthermore, modern research on scaffolding using an electronic book is a long process involving games or questions and answers. For instance, it uses the games available in the e-book (Bates et al., 2017; O'Toole & Kannass, 2018; van de Pol et al., 2015) with the same context and subject. Using the mobile application, the following scaffolding research in a modern context involved children and parents in the L1 context. The results showed that the stages and processes are more extended than before, involving adding

features to create a joint story (Christ et al., 2018; Kucirkova et al., 2015; Neumann, 2020).

There are scaffolding researches with applications that mostly use L1 as subjects, such as Kucirkova et al. (2015). These studies used the IPAD story to tell children aged two years in the L1 context with parents in English-speaking countries. Hence, the children and parents have more rich exposure than the EFL context. Furthermore, Neumann (2020) examined the cognitive, affective and technical scaffolding behaviors between L1 teachers. The study shared reading with students using technology-based e-book story applications and printed storybooks. The results showed that the affective and technical scaffolding frequency was higher with storybook applications than printed books. Therefore, teachers need more time when using the application because of the instructions and directions involved.

On the contrary, they take less time using flexible printed books due to shorter and easy-to-understand teacher instructions (Christ et al., 2018). It compares scaffolding between American children with English as their mother tongue (L1) and Turkish (L2) with English as a Foreign Language (EFL) in using an e-book story application. Moreover, it examines the children's reading styles in native versus foreign languages. The results show that children (L2) learners take longer to comprehend reading due to differences in understanding the source (English) and target (Turkish) languages. Consequently, they take longer to establish the story meaning, which is not experienced by the L1 learners familiar with the source language context. Neumann et al. (2020) used a reading application on an iPad containing ear stories in pre-school L1 children. The results show potential for developing writing skills in pre-school children through creating messages on tablets, email construction and name writing. The writing activities include picture drawing with a finger touch on the screen containing the story sequence.

Furthermore, this application fosters the children's literacy potential to understand reading texts quickly because of the pictures and features. In line with this, Kucirkova et al. (2015) explained the scaffolding theory potential that arises when children and parents interact using iPad storytelling. The results showed that using the iPad in story sharing with children and parents accommodates the scaffolding theory potential by reproducing stories, enriching vocabulary, and integrating the two when creating stories in the Our Story application.

The second discussion on the previous study focused on scaffolding implementation from the same review in the last 15 years. It involved children,

parents and traditional printed book media versus modern mobile applications, and in the context of English-speaking countries with no IQ and cognitive issues. The results show that the scaffolding implementation uses different media. Furthermore, printed scaffolding has a short stage involving reading and questions and answers (Aram & Aviram, 2009; Aram & Shapira, 2012). On the other hand, the scaffolding process using the e-story book is more prolonged, involving questions and answers, as well as reading and playing (O'Toole et al., 2018; van de Pol et al., 2015) because of the additional create-story feature (Christ et al., 2018; Kucirkova et al., 2015; Neumann et al., 2020). Therefore, scaffolding is longer than the printed storybook. Previous studies on the scaffolding implementation process are described as follows.

Aram & Aviram (2009) examined the frequency of reading printed storybooks by mothers and children towards language skills. Moreover, the study examined the impact of mothers' skills in selecting books on children's socio-emotional properties. The results showed a positive impact on the frequency of reading books related to language development, such as children writing words clearly, though they were previously not good at spelling. This study is important to choose books where characters and relationships relate to mothers' and children's daily conversations. This enhances discussions, resulting in a socio-emotional relationship (empathy) between mother and child.

Furthermore, Aram & Shapira (2012) examined the relationship between reading frequency and literacy among parents using printed storybook media. Additionally, the study examined the emotional relationship between children and mothers in sharing reading interaction activities with 78 L1 children. The results showed a relationship between reading frequency and literacy. The reading habits of children and parents at the home influence the increases in children's vocabulary. Also, it is influenced by the mother's guidance through their essential emotional role in the children's understanding of scaffolding in story-sharing activities.

Van de Pol et al. (2015) examined students' independent work duration using scaffolding techniques in small groups regarding printed book development into an e-book. Moreover, the study examined the supporting scaffolding quality's effects on the student's attractiveness, including teachers and books. The teacher's background experience is also prioritized in the development of children's scaffolding. O'Toole & Kannass (2018) examined the comparison between children and parents in reading sharing activities using the printed book and e-book media (audio narration feature) towards L1 with two children aged four years. The results

showed that children acquire more vocabulary using e-book media because of the audio narration. They listen even without seeing the e-book, but it affects their comprehension. Hence, children's comprehensions are better when using a printed media because they only focus on the book.

Regarding the development into applications, Kucirkova et al. (2015) identified sharing books using IPAD storytelling to children aged two years. The results showed that children and parents were able to interact effectively. However, the subject still focuses on L1 children and parents with good English skills. Christ et al. (2018) examined dyads' reading patterns (hotspot-centric, text-centric, and integrated). Children read differently in their native versus a foreign language, and interaction styles determine how reading patterns change over time. Integrated reading is navigated sequentially through a book application, collaborative social interactions concerning more profound meaning creation, and compelling continuous reading. Implications include modelling and scaffolding practical readings, selecting text for instructions, and designing application books with practical features. Finally, Neumann et al. (2020) analyzed teachers' cognitive, affective, and technical scaffolding behaviors in sharing reading with students towards applying story printed books. The results showed a higher frequency of affective and technical scaffolding with storybook apps than printed storybooks. In addition, teachers made more sayings and spent more time reading storybook apps than printed books.

The subject and context of scaffolding have been discussed, but its implementation is limited to the (L1) context, rich English exposure and no communication barriers. Also, most subjects have no communication, cognitive and IQ constraints affecting the scaffolding process. Therefore, this study compares scaffolding in children with different cognitive and IQs impairments. The questions aim two folds.

1. What are emerging themes present in L2 Parents and ASD Child talk after long interaction using story Apps?
2. To what extent can scaffolding theory account for the interaction knowledge of the two dyads after long interaction using story Apps?

3. Method

3.1. Design

This study theorizes the scaffolding interaction between parents and ASD children using Story sharing with the Our Story application using a case study. It is an in-

depth analysis of the scaffolding in the two groups of ASD children with their parents in the L2 context. The children have cognitive impairments, different IQs, and limited access to English exposure. Case study research focuses on the uniqueness of the ASD as the research participants (Rule et al., 2011). It involves observing participants, interviews and direct document analysis once a week for six months. This aims to evaluate the potential for scaffolding theory in story-sharing activities through an application. The process is conducted through data collection and analysis (Kucirkova et al., 2015)

3.2. Participant and Contexts

Subjects were selected through a questionnaire given to 2 Special Schools and 2 Autism Therapist Institutions at the provincial level. The questionnaire was adapted from Kucirkova et al. (2013), which shows how to choose a subject: parents who often conduct story sharing using the Our Story application. A total of 300 parents and children were selected through questionnaires sent via email and WhatsApp using previous project (Arifani et al., 2021). The questionnaires were shared from one parent to another until it was found that two autistic children were using the Our Story application in English learning with their parents. The two subjects, ZN and DM, and their parents only gain limited English exposure in school once a week for 100 minutes. The parents have passive English skills with a limited vocabulary. Furthermore, with parental consent, the two subjects were invited to the ASD center at the university, where the research team worked for an IQ test. The IQ test results show that the ZN and DM subjects have 110 and 95, respectively.

3.3. Data Collection

Data were collected for six consecutive months, once a week from 4 to 6 in the afternoon, where the research team visited the two subject groups' houses. They were directly involved in the story-sharing activities with children and parents through the Our Stories application. The observations and interviews examine the contents in the story-sharing activities using the Our Story application through mobile phones. In this case, no special instructions are given regarding using the application to create and share new stories via the video recorded and transcribed. Instead, the two subject groups, ZN and DM, and their mothers made stories on

daily activities, fruits, hobbies, holidays, and food during this activity. Interviews were conducted after each subject completed the story, which was then transcribed by the research team. The approach used is in line with the British Educational Research Association's practice ethics (British Educational Research Association., 2011).

3.4. Data Analysis

Data were analyzed simultaneously during observations, interviews, and the story-sharing activities by the two subjects. Furthermore, the transcripts were analyzed using the inductive model following the Kucirkova et al. (2015) and thematic analysis. The inductive and thematic analysis is based on Vygotsky's theory concerning the three themes of scaffolding learning. These include Zone Proximal Development (ZPD), dual representation, and double stimulation towards the two subject groups' story sharing process. Each theme of the three scaffolding theories is cross-checked to avoid data interpretation subjectivity. For instance, the theme of the two subject groups' daily realistic stories is resolved, and one research team member interprets the resulting transcript. The other research members then interpret the same transcript to find out any differences. In case of differences in the transcript interpretation, it is discussed with the senior lecturers in the department to mediate the problem.

4. Findings

This study aims to find the emergent theme and theorize the scaffolding on the interaction potential of autistic children with the Our Story application in the EFL context with limited English exposure. In this case, children only learn English from the Our Story application, YouTube and mobile dictionary. Also, they only learn vocabulary in schools with English subjects for 100 minutes. Hence, three themes could be taken in the observation, including realistic daily story, scaffolding emergence, and Engaged players and play objects. The quotes from the first to the third theme are outlined as follows:

4.1. Realistic Daily Story

This theme is related to familiar objects, such as imaginative storytelling while

carrying out daily activities. The mother supplies children with pictures of other children but with the same usual activities. They involve using audio and pictures of daily activities, accompanied by their related stories. Furthermore, ASD children mentioned every activity according to the picture, such as eating, playing, sleeping, and its image and colors. The mother and child use English, which is minimal, and Indonesian languages. Therefore, ASD children are assisted by the mother in learning and arranging the storyline. At the beginning of the story, they both make the character name with Kevin because the child does not want their name to be used.

- Mother 1 Apakah ini dimas? [*Is this Dimas?*]
- DM No, me, Kevin
- Mother 1 What is Kevin doing?
- DM Tidur atau sleep [*Tidur or sleep*] (say in Indonesian and translate in English)
- Mother 1 Bagaimana cara dia tidur? [*How does he sleep?*]
- DM (Doing sleep movements)
- Mother 1 That is good
- Mother 2 “Apakah yang Kevin lakukan dipagi hari? what is juna’s do?” [*What did Kevin do in the morning? what is juna's do?*]
- ZD It is pray mom, and he will sholat like *Allahuakbar* (mentions what he is doing on the image)

The parents and second child make stories by typing. Children focus on joint creation and writing in the application about stories, while the mother focuses on grammar. ZN and their mother smoothly made a story together.

4.2. Scaffolding Interaction

Mother1: *Apa yang Kevin lakukan?* What are kevin do?

HMM (Thinking) Kevin...

Mother1: the first word is P, and the second is R (Mother give a clue)

DM *Sholat [Pray]* (Indonesia Language)

Mother1: In English Please

DM (Open the dictionary) Pray (Answer with gusto)

Mother1: What is next?

DM *Main bola* Play soccer.

Mother 1: *“apakah kamu pagi bangun langsung main bola? [do you wake up in the morning immediately playing ball?]* (When it is not in line with the context, the mother does scaffold indirectly by reminding Dimas of their daily activities. Furthermore, Dimas realizes that it is impossible after praying in the morning to play ball immediately) Do you want to play the game in the morning?"

DM: *Makan*, eat('āt) (Wrong Pronunciation,)

Mother1: Yes, eat ('ēt)(Good Pronunciation, the mother indirectly helps to correct the child's pronunciation)

DM *Makan*, eat('āt) (Wrong Pronunciation,)

Mother 1 No, no eat ('ēt)

DM Eat ('ēt) (Correct Pronunciation)

This theme shows how mothers apply scaffolding to their children in making stories together. Mother 1 used scaffolding to give a clue when her child forgets the vocabulary. Additionally, the mother ensures the child flows according to their daily activities concerning co-created stories and correct pronunciation. For a scaffolding flow card where the child does not understand English, they use the dictionary to answer questions.

DM does not make good pronunciation in storytelling sequencing, and their grammar structure is not suitable for the mother. Hence, the way the mother and child pronounce it are still acceptable.

The second mother and ZN's child made a story together, discussed the use of

grammar, the choice of words to be written, and ensuring the child stays on the appropriate storyline.

ZN Hmm No, they are playing outside (Shows an image of two children playing ball in the field)

Mother 2 They are playing in the field, not on the outside. It is too wide to say outside (In this case, the mother specifies the use of vocabulary in the story app and explains their function.)

ZN Okay, Is it soccer or football?

Mother 2 Well, it looks the same (The mother could not tell the difference between soccer and football)

When ZN wrote, the mother checked and corrected what was written, adjusting the grammar's past, present and future function and helping with English spelling.

ZN Juna eat (In the image, a boy is eating)

Mother 2 (See ZN writing) you need to add eat with "S" because it is a daily routine (It seems that parents focus on grammar and pronunciation)

ZN Ini makan bubur mom, apa bahasa inggrisnya Bubur? [*It is eating porridge mom, what is the English word for Bubur?*]

Mother 2 It is Porridge (directly answer children's questions)

ZN How to write it, mom?

Mother 2 It is P-O-R-R-I-D-G-E

ZN (Write it down on iPad)

The first subject does not answer directly but allows children to find out the answers through the mobile dictionary application on their cellphones. The process involves making a story and experiencing a stuck, where the mother asks to check in the dictionary, answer, and write contextually. The second subject composed the story through making, getting stuck, the mother immediately answering questions, and the children copying and answering contextually. Both parents facilitate and use

different strategies or stages, starting from the story. However, they used similar strategies to support different knowledge, giving their children various opportunities for assisted performance and autonomy in their ZPD (Wood et al., 1976). The first mother focused on app usage, storyline, and pronunciation, while the second focused on grammar and storyline placement. The discussion outlined the beginner children versus teacher status in this process.

4.2.1. Engaged Players and Object of Play

This theme shows a relationship between the Vygotsky theory of double stimulation and sharing representation on parent-children's interactions. According to Vygotsky theory, one group of stimuli functions on the directed experimental subject's activity, while the other regulates activities. Evidence of story development by parents and children assisted by application and scaffolding is represented as follows:

- ZN Aku ingin menulis saja ketimbang merekam [*I just want to write rather than record*] (Take a mobile phone and write about the daily activities, such as "Juna's wake up" without any difficulty)
- Mother 2 (Asking and monitoring the children's writing) here
- ZN Bagaimana cara menghapus ini? [*How do I remove this?*] (Shows the sentence they wrote on the screen)
- Mother 2 This one (Assist in deleting by showing the delete button on the screen)
- ZN (The children erase space then write the continuation from a different picture, namely "Juna's Play")
- Mother 2 You need to use "Ing "because it continues (Mother Type and helps the children type."
- DM I drag here (dragged the picture, but never entered the application)
- Mother 1 (Helps to drag pictures in the application)

- DM Apakah tulisan soccer sudah bagus? [*Is the writing of soccer good*]
- Mother 1 Kamu bisa lihat dikamus karena ibu tidak tau [*You see in the dictionary because I do not know*]

The review shows that the children and parents used our Story applications to create a joint story about daily activities. The first group of children and parents used the application with Indonesian and mixed English. However, they did not directly answer the children's questions but allowed them to see the dictionary first. Conversely, the mother helps the children directly when they face difficulties in technical application. The second subject's parents used English and Indonesian and directly answered their children's questions regarding vocabulary.

5. Discussion

This research aims to find emerging themes and theorize the potential interaction of autistic children with Our Story application to EFL based on the existing themes. The emerging theme was found from the first dyads EFL parent- ASD learner with 110 IQ and the second dyads EFL parents – ASD learner with 95 IQ levels. The emerging themes from the two dyads involved realistic daily stories, scaffolding interaction, engage and object play. Those three themes commonly emerged because they represented their daily activities. Although those themes were similar, the process of story creation showed different stages. The story creation and scaffolding processes from the ASD learner with 95 IQ level were more complex than the ASD learner with 100 IQ level. The ZPD process, in this study, involved seven interrelated stages: recall, translation, imitation, cooperation, target and crises. Those scaffolding processes were then elaborated in the following parts.

The first scaffolding discussion dealt with the ASD learners' translation process during the story-sharing experience. During story share writing, the ASD learners with 95 IQ level tended to get translation from the dictionary and his mother to translate the simple unfamiliar words several times. Meanwhile, the ASD learner with IQ level 110 only used his mobile dictionary or sometimes asked his mother for the word meaning, but the translation process did not repeatedly occur since only unfamiliar words were required to be translated. Compare to the previous study; these findings were different from Kucirkova et al. (2015). In the context of

L1, where scaffolding happened between parent and child did not involve the translation process because they (mother and learner) came from native speaking English country. The study participant of this previous study did not have serious language issues like in the L2 setting as English was their mother tongue and used English in their community. They also had adequate English vocabulary to write their study just from their parent' guiding questions without translating. In the different reading activities, another study by Arifani et al. (2021) found ASD learners used translation strategy during reading comprehension with the PISA reading test. Physiologically, ASD learners had cognitive issues, communication barriers, and limited English vocabulary, so they got severe problems comprehending the English text and constructing their story. Therefore, dictionary translation became an alternative solution to address this issue (Arifani et al., 2021; Song et al., 2019).

The second discussion deal with recall as part of the scaffolding process. The recall process between the two ASD Learners showed different stages. The ASD learners with lower (95) IQ levels indicated longer recall stages than the opposite ASD subject with 110 IQ levels. The more extended recall stages of first ASD learners involved remembering their activities and connecting their daily activities to the story apps pictures. Meanwhile, the second ASD learners had only one recall stage of connecting their habitual activity to the plot of the story app. The ASD with a lower IQ level needed repetitive recall using gestures, examples, and drills from his mother to connect the sequences of his daily activities, from waking up in the morning to sleeping at night. After he got his memory, then, his mom brought them to story apps context.

Meanwhile, the ASD learner with a high IQ level can directly connect his regular activities to the story apps after translation process scaffolding, as shown from the previous stages. Compare to previous studies, the recall process between ASD in EFL contexts and study participants in English speaking countries were different. During story sharing with story apps, the learners recall process in English context indicated immediate recall process and poured the recalled idea into the story apps without intensive scaffolding from their parents (Kucirkova et al., 2015; Neumann, 2020). Conversely, the ASD with a low IQ level performed longer recall because of his cognitive barriers. Therefore, he needed repeated recall as well to store the information in his short-term memories. In this study, imitation from parents became contributive factors for the ASD learners to help memory storages

(Bernard-Opitz et al., 2001; Field et al., 2010; Ingersoll & Gergans, 2007; Kucirkova et al., 2015; Neumann, 2020)

Regarding the imitation process during scaffolding activities, the two subjects perform different imitation activities. This finding found different imitation processes from three learners from the L1 context involving the study participants from native English-speaking countries (Christ et al., 2018; Kucirkova et al., 2015; Neumann et al., 2017; Neumann et al., 2020). In the L1 context, the learner could directly imitate and perform snoring when the parents asked the child to imitate and perform the Barbie's snoring when she was sleeping (Kucirkova et al., 2015; Neumann, 2020). It also indicated that L1 learners could decode their parent's instruction well and give a spontaneous response because they did not have an English vocabulary barrier and communication problem. Even they could pronounce and write the word snoring correctly. Differently, the ASD learner L2, with a high IQ level, could only imitate his parent's gesture performing 'praying activity', and he could continue answering the English word of praying without translating. Meanwhile, the L2 ASD learner with a low IQ level could only imitate the same praying performance from his parent, but he could not say and write the English words before getting repetitive drills and translations from his parent. This finding suggested that learners' language background and psychological condition (communication and cognitive barriers) could influence learners' language production during a story sharing session with peers/parents (Hulme et al., 2020; Neumann et al., 2020; Newman, 2000; Sobel et al., 2021).

The fourth discussion dealt with ASD learners' cooperation process during their interactions with story app and parents. In the previous study, the L1 participant found the mothers helped their children to write stories using scaffolding questioning and typing together smoothly without intensive scaffolding activities during story sharing sessions. From parents' questions and gestures, the study L1 participants could directly respond to them appropriately using proper English and pronunciation (Flege et al., 1997; Kucirkova et al., 2015; Neumann, 2020; Rindal, 2010; Uzawa, 1996). Meanwhile, with the L2 ASD with high IQ, the mother helped her child translate the unfamiliar words and check the spelling, grammatical, and pronunciation issues during the story sharing session. The scaffolding of cooperation even became more intensive than the first ASD subject because of the cooperation process; during the story writing process, the mother was required to perform intensive and repetitive drills, recall, translate, correct, give examples and

write the story. A unique finding emerged from the parents' effort to correct their ASD learners' ungrammatical sentences as their parents did not have an English education background. Therefore, their scaffolding process flow naturally based on what they perceived about languages as Grammarly-minded scaffolding. It was reflected when the ASD learners made ungrammatical sentences like "He play in the field (missing)", and it was then corrected into "He plays in the field". It should be "He is playing in the field". This showed a tendency for EFL or L2 to pay attention to grammar due to the fear of making errors in EFL (Latif, 2015; Rezaei & Jafari, 2014; Yastibaş & Yastibaş, 2015). The L2 scaffold focused more on language knowledge, including grammar function, vocabulary usage, and writing. This aligned with (Brown 1998; Haman et al., 2017; Nagata, 1998; Schwienhorst, 2010; Tham et al., 2020; Wach, 2016) that EFL focused on and was concerned with language writing and vocabulary usage. Consequently, this hampers their communication skills, self-confidence, and creativity in developing English stories when the child only focuses on grammar and spelling.

The sixth discussion was concerned with targets in proximal development zones. Both ASD Learners proximal development did not appear spontaneously like in the L1 learners. Instead, their proximal development emerged during the interaction with their parents (progressively). During the interaction process, the ASD learners with high and low IQ levels could produce short sentences after they got intensive scaffolding from his parent. Conversely, the process of proximal development within the L1 subject emerged spontaneously after they obtained clues and examples from parents. Therefore, they could produce more comprehensive stories in their story app using acceptable English words (Christ et al., 2018; Kucirkova et al., 2015; Neumann, 2020).

The last discussion dealt with target and crisis as part of the scaffolding. A previous study by (Daniels, 2016; Freeman, 2012; Schweisfurth, 2015) showed that ASD children with high and low IQ and normal L1 children have the same target process in theory scaffolding through mediation, but the mediation process using the same story app type, parents, and learners was different between the two groups (EFL ASD and L1 learners). The different target and crisis stages were the L1 children did not experience difficulties in making stories and using our story applications, while L2 ASD encountered language problems. The reasons for the crisis process from L2 ASD are language and communication problems (Al-Musawi, 2014; Calis & Dikilitas, 2012; Morahan, 2010). Therefore, there are more

crises from L2 than L1 children. Furthermore, L2 ASD children have difficulties in expressing themselves when they do not understand the language they use (Brown, 1998; Haman et al., 2017; Wach, 2016)

6. Conclusion

The scaffolding theory findings between L1 without the IQ variable and the L2 ASD with different IQ variables in story sharing using the Our Story application showed that the scaffolding variation in the L2 ASD differed from the L1 context. ASD with a low IQ level had longer scaffolding processes because of the limited vocabulary, cognitive, and technical issues that required them to use the story app. The EFL parents who did not have English background relied much on grammatical flaws and corrections when their ASD children made language errors. It implied that they did not know how to do effective scaffolding.

This study's pedagogical implication is that learning English in ASD children should focus more on communication functions than grammar and spelling. This is because it hinders their communication skills, self-confidence, and creativity in developing stories in English. However, the limitation of this study is that the acquisition process has not yet been explored in detail on how L2 ASD children absorbed vocabulary. Also, the number of vocabularies with different IQ levels to be mastered by ASD children has not been explored. Therefore, further research should examine the vocabulary and the acquisition stage of L2 ASD at different IQ levels. Moreover, it should test the vocabulary owned by ASD children before the scaffolding interaction.

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