

Autonomous learning patterns of students with special needs in quantum learning using flipbook media at Indonesia

Ima Isnaini Taufiqur Rohmah^{1*}, Fitri Nurdianingsih², Okta Ika Rahmawati³, Achmad Danny Prasetyo⁴, Roszdina Asyidda⁵

^{1,2,3,4,5}IKIP PGRI Bojonegoro; isnainiima@ikipgribojonegoro.ac.id (I.I.T.R.) fitri_nurdianingsih@ikipgribojonegoro.ac.id (F.N.) oktha_ika@ikipgribojonegoro.ac.id (O.I.R.) dannyprs26@gmail.com (A.D.P.) elbirkarossdinaelbirka@gmail.com (R.A.).

Abstract: Autonomous learning referred to students' ways and processes to develop their learning skill independently and take responsibility of it. Autonomous learning encouraged students to have active responsibility in their learning process, develop their metacognitive skill, and be more independent and proactive learners. This study aimed to investigate autonomous learning pattern of students with special needs in quantum learning using flipbook media. This was qualitative research in form of case study. The participants were primary school students at Bojonegoro Regency, Tuban Regency, and Cepu Regency. Those regencies covered various students' backgrounds and special needs. From all participants, five students were selected specifically. They were selected because they showed characteristics of autonomous learning skill that could be easily identified. Data was collected using observation and in-depth interview. Technique in analyzing data was thematic analysis technique. Data was validated using member checking. Result of study showed that students with special needs who utilized flipbook media in quantum learning tend to be more independent in setting learning goals, managing learning process, taking initiative, completing assignments, and conducting self-reflection to their progress. It could be concluded that quantum learning using flipbook media could be effectively create five patterns of autonomous learning for students with special needs at Indonesia.

Keywords: *Autonomous learning pattern, Flipbook, Quantum learning, Students with special needs.*

1. Introduction

Students with special needs are students who have different needs compared to normal students. They tend to have limitations with different characteristics. The difference between them makes education for students with special needs in Indonesia has problems, especially the learning management and services [1]. The poor learning management is caused by conditions of students with special needs who are stressed in learning activities [2]. The stressful condition can be caused by various factors, therefore teachers have to be able in analyzing learning needs which can help their readiness to study [3]. One of learning needs which can encourage and motivate students with special needs to be more prepared and competent in the learning process is by implementing autonomous learning approach [4].

Autonomous learning is closely related with students' skills in understanding material, having creativity, being expressive, and being confidence in the learning process [5]. Autonomous learning contains freedom in learning decision to help students in building knowledge and skill which are relevant with their personal conditions [6]. Furthermore, the concept of autonomous learning can facilitate students in enlarging their life choices in the future time [7]. It can be said that this approach is appropriate to be implemented in the learning process for students with special needs who have

different characteristics; this approach provides higher students' self confidences, builds suitable skills, and trains students' independent attitude in the future.

However, student's autonomous or independent attitude in the real life is low because students tend to require teacher's role in increasing their learning achievements [8]. In this case, autonomous learning still needs many modifications to drive students to be more committed to their learning exploration [9]. Teachers have to insert autonomous learning into appropriate learning model, so the students can easily understand the materials and increase its process [10]. One of learning models which can add autonomous learning in the teaching and learning process is quantum learning model.

Quantum learning model can facilitate students to be more active in the classroom by providing comfortable, easy, and enjoyable learning process, so the learning success will increase significantly [11]. This learning model also provides satisfactory results in increasing students' skills, motivation, and learning achievements [12]. In line with it, [13] reveal that quantum learning is designed dynamically and happily to improve students' learning outcomes and memories. Therefore, quantum learning has a big role in encouraging students to be active by providing comfortable, easy, enjoyable, dynamic, and vital learning environment.

The implementation of quantum learning helps students to improve their problem solving skill; but it takes long time to motivate them [14]. It is also able to make students increase their psychomotor skill through various student interactions, interaction with teacher, peers, and learning media [15]. The media in quantum learning is related to the use of technology which can increase [16] students' understanding and material interpretations [17] or multimedia tools that can be alternative to create the perfect learning model and accommodate the differences students' learning styles [18]. A technology or multimedia tool which can be used in it is flipbook media.

Flipbook is a media that utilizes digital packaging, so it contains interesting materials which enable students to study it enjoyable and give positive impact to their interest, motivation, and learning outcomes [19]. By using flipbook media, the materials can be adjusted based on students' needs, so it creates more practical learning [20]. Several researchers in [21] state that the implementation of flipbook is appropriate in quantum learning for students with special needs with autonomous learning style.

A research conducted by Isfatin which is studied by [22] reveals that the use of flipbook in quantum learning increases the effectiveness of quantum learning model. By utilizing flipbook in quantum learning, students' average scores are increased significantly, so the goals of learning can be achieved well. It is showed that students' learning outcomes are increased in quantum learning using flipbook.

Apart from the integration of flipbook and quantum learning model, [23] state that in their research, flipbook is closely related to student's autonomous learning. It is revealed that flipbook increase students' autonomous learning and responsibility toward their learning outcomes. Based on test result of small group, the research shows that flipbook creates students' autonomous learning, so they can study independently any time and any where.

In addition, [24] conduct a research related to the development of flipbook for students with special needs. Its result shows that flipbook can facilitate students with special needs in the learning process through material adjustment. Flipbook becomes a new opportunity which supports the learning process of students with special needs. Therefore, it needs further research to explain the role of flipbook media in the learning process of students with special needs.

Based on previous research, flipbook which is inserted in quantum learning to implement autonomous learning for students with special needs can be an innovation in the learning process. Flipbook optimizes the implementation of quantum learning, increases students' autonomous learning, and helps students with special needs in adapting to better learning process. This study aims to investigate the autonomous learning patterns of students with special needs in quantum learning using flipbook media.

2. Theoretical Framework

2.1. Students with Special Needs

Students with special needs have certain limitations, so they need different educational services. It is because their limitations makes the learning process to be more difficult [25]. The difficulties can include physical or mental limitation [26]. The obstacles of students with special needs are more complicated; however they are able to increase their academic achievements, skill to control their emotion, and emotional growth through appropriate learning approach [27].

Students with special needs have certain characteristics which differ them to normal students. They are often said as disabled students [28] who have various characteristics in learning difficulties, social difficulties [29], hearing difficulties [30], visual difficulties [31], speaking difficulties, etc. [32]. So, they require a lot of empathy or attention from others [33]. Self limitations of students with special needs are in different levels, starting from light disability to severe disability [34].

2.2. Autonomous Learning

Autonomous learning is a learning approach in which students are required to set and manage their own learning process. It is said to be effective learning approach which can support students' independence [35]. Several studies in [36] define that autonomous learning requires students to make decision and manage their learning process independently. Therefore, it can make students to set their learning goals and materials which are suitable for them after conducting consultation with teachers or other persons, so they can make objective evaluation [37].

2.3. Quantum Learning

Quantum learning is innovation in learning model which builds learning experiences from various students' interactions, so it can show their skills and interest [38]. This learning model directs to a learning process which pays more attention to students' backgrounds, so they can create suitable and enjoyable learning activities [39]. In general, quantum learning model has five important points, namely 1) instilling, 2) experiencing, 3) labeling, 4) demonstrating, 5) repeating, and 6) celebrating [40]. Therefore, quantum learning can be said as a learning model which emphasizes on students' active involvement through various learning interactions.

2.4. Flipbook Media

Flipbook is one of digital learning media in form of interactive books which enables students to open page, see pictures, read text, and play video directly. In line with [41], flipbook is book innovation by adding video or animation features. Flipbook media can be said as multimedia that is designed based on text books [42] and implemented digitally using smartphones, tablets, or computers [43].

3. Methods

3.1. Research Design

This study was qualitative research in form of case study. It was focused to explore and understand the autonomous learning patterns of students with special needs in quantum learning using flipbook media at Indonesia. The researchers analyzed the ways of students with special needs in using flipbook media in the learning process and how they develop autonomous learning skill. Using case study, this study tried to present comprehensive and detail views of students' learning experiences in specific setting. It also tried to provide knowledge related to the use of flipbook media in quantum learning for students with special needs.

3.2. Research Participants

The participants of this study were primary school students in Bojonegoro Regency, Tuban Regency, and Cepu Regency. Those regencies covered various students' backgrounds and special needs.

They came from various social and economic backgrounds, so it provided broader view about the obstacles and opportunities in implementing flipbook media in quantum learning.

From all participants, five students were selected specifically. They were selected because they showed characteristics of autonomous learning skill that could be easily identified. The researchers interviewed five students to obtain more specific descriptions about how they set their autonomous learning using flipbook media. In interview, the researchers could know their strategies in it, their obstacles, and the process to build autonomous learning in the primary school. The selection of five students provided more opportunities to explore typical learning patterns which were relevant to autonomous learning.

3.4. Technique in Collecting Data

Data was collected using observation and in-depth interview. The observation technique was important to see directly about how students with special needs develop autonomous learning pattern in quantum learning using flipbook media. In this case, the researchers observed students' attitudes, interactions, and skills in completing assignments, managing time, and exploring learning materials. In-depth interview facilitated the researchers to obtain the data of students' experiences, reflections, and understanding in the learning process. The researchers could explore about students' ways to use flipbook, set learning time, and obstacles in quantum learning.

3.5. Technique in Analyzing Data

Data was analyzed using thematic analysis technique. It was general approach which often used in qualitative research [44]. This analysis technique was utilized to obtain broad, careful, and in-depth answers [45] to a question based on analysis results of qualitative data [46]. The steps in conducting thematic analysis technique in this study were:

1. Transcribing data from interview and observation notes.
2. Conducting coding by marking data segments with relevant codes.
3. Grouping themes by organizing codes into large themes which described the main pattern.
4. Conducting analysis by providing explanation of themes related to students' autonomous learning patterns.
5. Preparing a detail report regarding its findings and implication.

3.6. Technique in Validating Data

The data validation technique in this study used member checking. Member checking was a high-quality technique in validating data [47] that had been widely recommended in qualitative research [48] because it could be used to explore result credibility using respondents' feedback [49]. The steps to conduct data validation using member checking were:

1. Presenting findings in form of a summary of data analysis result.
2. Asking students' responses by giving question "Do they feel the results are accurate and reflect their experiences?"
3. Revising by adjusting the analysis results and findings based on students' responses or feedback to ensure its accuracy and relevance.

4. Results

Students with special needs in Indonesia emerged several autonomous learning patterns in quantum learning using flipbook media. In the context of inclusive education, flipbook had significant role in providing more interactive learning access which was suitable with individual need. By using flipbook, students with special needs could easily access learning material, explore topics, and build confidence in completing assignments independently. The flipbook media could be accessed in <https://online.fliphtml5.com/ewnzi/hxjg/#p=1>. The cover of flipbook media could be viewed in Figure 1.

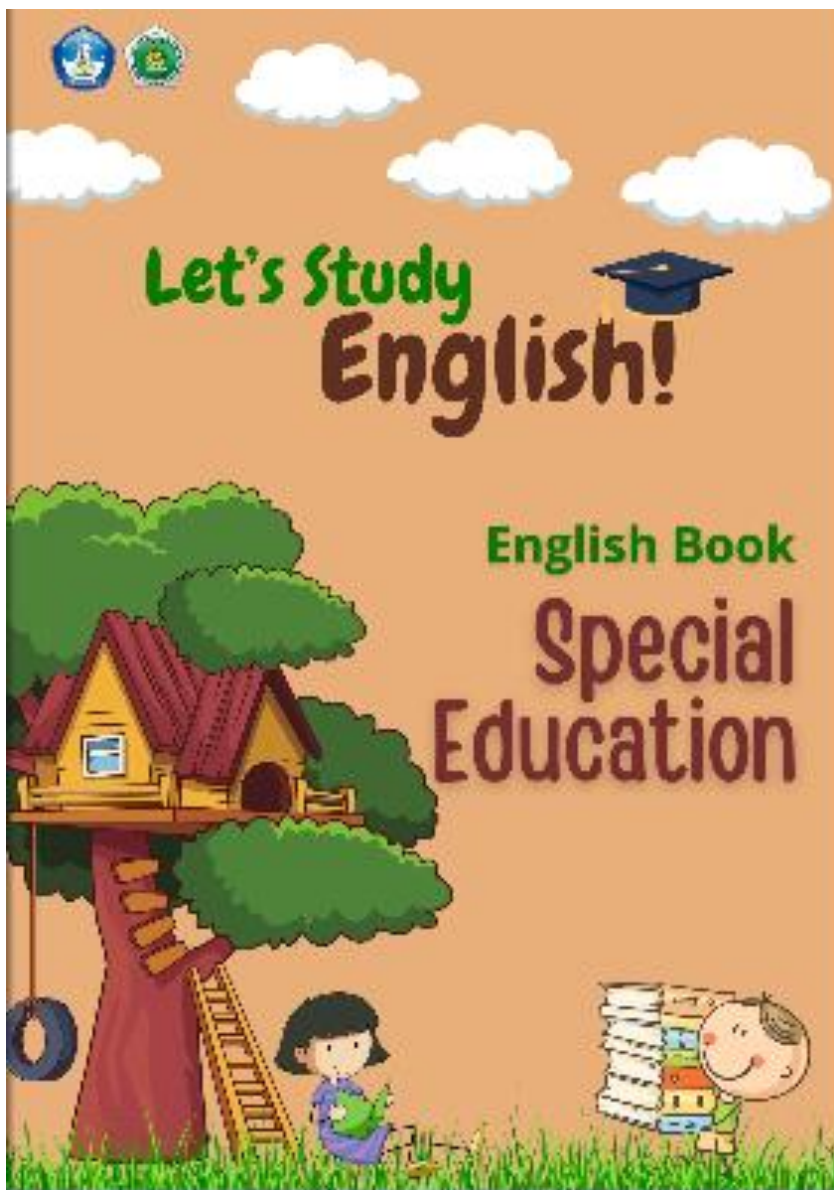


Figure 1.
Cover of flipbook media.

Flipbook media in quantum learning could support students to create more stable and structured autonomous learning patterns. Students, who had difficulties in setting learning time and understanding materials, could control their learning process. Flipbook not only provided learning content which could be repeated many times, it also provided interesting materials to motivate students to learn without teacher's instructions.

Autonomous learning of students with special needs in quantum learning using flipbook media at Indonesia had five patterns. The patterns were a) pattern of setting personal goal, b) pattern of self-regulation in managing time and focus, c) pattern of initiative in exploring materials, d) pattern of independence in completing assignments, e) pattern of reflection and self-evaluation. Those five patterns could be viewed in Figure 2.

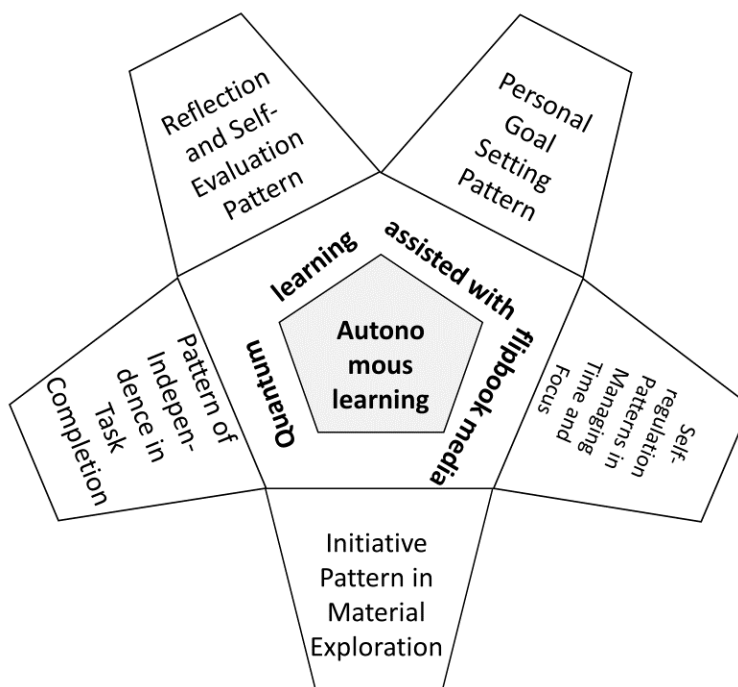


Figure 2.
Autonomous learning patterns of students with special needs at Indonesia.

The five autonomous learning patterns of students with special needs could be described as followed:

4.1. Pattern of Setting Personal Goal

Students with special needs were able to set specific learning goals which were suitable for them. Flipbook was designed with a clear structure to facilitate them in setting realistic and achievable target both in short and long terms. They began to recognize their learning needs. This result could be strengthened by interview transcript as followed:

R : "Selamat pagi mbk. Bisa kamu ceritakan bagaimana flipbook ini membantu kamu dalam menetapkan tujuan belajar? [Good morning. Could you tell me how this flipbook help you in setting your learning goal?]"

P1: "Pagi, Bu. Flipbook-nya sangat membantu. Saya jadi tahu langkah-langkah yang harus saya lakukan, mulai dari yang mudah sampai yang lebih sulit. [Morning, Ma'am. This flipbook is very helpful. I know the steps that I have to do, starting from the easy step to the difficult ones]"

R : "Apakah kamu merasa lebih mudah menetapkan target belajar, baik jangka pendek maupun jangka panjang? [Do you find it easier to set learning target both in short and long terms?]"

P1: "Iya, saya bisa bagi-bagi tugas kecil dulu, baru nanti tugas yang lebih besar. Jadi, lebih fokus dan nggak terasa berat. [Yes, I do. I can do the easy task first, then the difficult ones. So, I can be focus and take it easy]"

R : "Bagaimana kamu tahu kapan sudah mencapai pemahaman yang cukup untuk melanjutkan ke tahap berikutnya? [How do you know when you have reached enough understanding to move on to the next step?]"

P1: "Kalau saya bisa menjawab pertanyaan latihan atau bisa jelaskan ke teman, itu tandanya saya sudah paham. [When I can answer the question or explain it to my peers, I think I have understood it]"

R : "Apakah sekarang kamu merasa lebih percaya diri dengan cara belajar ini? [Do you feel more confident with this way of learning?]"

P1: "*Iya, saya merasa lebih percaya diri karena setiap target kecil yang tercapai bikin saya lebih semangat lanjut ke tahap berikutnya.* [Of course, I get more confident because every small target achieved, I become more motivated to move on the next step.]"

4.2. Pattern of Self-Regulation in Managing Time and Focus

Autonomous learning facilitated students in developing self-regulation skill, such as in managing time and learning focus. Flipbook media allowed students to learn based on their capability without any external pressure, so they could allocate their time to study based on their focus. They also learned to overcome obstacles, such as difficult to concentrate in their rest time and learning time. This result could be strengthened by interview transcript as followed:

R : "*Halo, mas. Saya ingin tahu lebih lanjut bagaimana kamu mengelola waktu belajar saat menggunakan flipbook. Apakah kamu merasa bisa belajar sesuai kecepatan kamu sendiri?* [Hello. I want to know, how you manage your learning time when using flipbook. Do you think that you can learn at your pace?]"

P2: "*Halo, Bu. Iya, saya bisa belajar lebih santai tanpa harus terburu-buru. Flipbook-nya membantu saya untuk lihat apa yang harus saya selesaikan, jadi saya bisa atur waktu belajar sendiri.* [Yes, Ma'am. I can learn enjoyable without having to rush. The flipbook helps me to see what I need to complete, so I can set my own learning time]"

R : "*Apakah kamu merasa lebih bisa fokus ketika belajar tanpa tekanan dari luar? Bagaimana kamu mengatasi kesulitan konsentrasi?* [Can you be more focus when you learn with external pressure? How do you overcome your difficulty to concentrate?]"

P2: "*Iya, belajar jadi lebih nyaman. Kalau merasa nggak bisa konsentrasi, saya biasanya istirahat dulu, baru lanjut lagi. Dengan flipbook, saya tahu kapan harus berhenti dan kapan bisa lanjut.* [Yes, I can. When I cannot concentrate, I will take a rest first and continue it. By using flipbook, I know when I have to stop or continue my learning.]"

R : "*Bagaimana cara kamu mengatur waktu istirahat dan belajar agar tetap produktif?* [How do you manage your rest time and learning time to stay productive?]"

P2: "*Saya coba atur dengan belajar sedikit-sedikit tapi sering. Kalau sudah mulai capek, saya berhenti sebentar, terus lanjut lagi kalau sudah segar. Jadi, saya nggak terlalu memaksakan diri.* [I try to study a little bit for several times. When I get tired, I stop it for a while. Then, I will continue when I get more refreshed. So, I do not force my self.]"

4.3. Pattern of Initiative in Exploring Materials

Students with special needs showed initiative to explore learning materials independently. By using flipbook, they could obtain more interesting materials. Interactive and interesting flipbook motivated them to explore various learning topics and complete assignments with greater curiosity. This result could be strengthened by interview transcript as followed:

R : "*Halo, mas. Saya ingin tahu, apakah kamu merasa lebih tertarik untuk mengeksplorasi materi sendiri ketika menggunakan flipbook?* [Hello. I want to ask you. Are you interested to explore learning material using flipbook?]"

P3: "*Iya, Bu. Kalau lihat materi di flipbook, saya jadi penasaran dan pengen tahu lebih banyak. Ada banyak hal menarik di sana yang bikin saya mau coba-coba lihat tanpa harus nunggu arahan dari guru.* [Yes, I am. When I see materials in flipbook, I feel curious. There are many interesting things in it, so I want to explore it without waiting for teacher's command]"

R : "*Bagaimana menurut kamu, apakah flipbook yang interaktif dan menarik secara visual membuat kamu lebih termotivasi untuk menyelesaikan tugas dan mengeksplorasi topik baru?* [Do you think that interactive and interesting flipbook motivates you to complete the assignment and explore new topic?]"

P3: "*Iya, soalnya flipbook-nya nggak ngebosenin. Ada gambar-gambar dan video juga, jadi saya lebih semangat buat belajar. Saya bisa cari tahu hal-hal yang belum pernah saya lihat sebelumnya, jadi lebih ingin tahu dan*

nggak sabar buat belajar lebih banyak. [Yes, I do because flipbook is not boring. I can find new things, so I feel curious.]"

4.4. Pattern of Independence in Completing Assignments

Student's ability to complete assignment independently was increased because of flipbook. They did not rely on teacher's instructions, they tried to complete the assignments based on their capability and understanding. Flipbook provided them an easy access to learn materials and its examples many times. It helped them to learn independently and find solution for their problems. This result could be strengthened by interview transcript as followed:

- R : "*Halo, mbak. Saya ingin tahu, apakah kamu merasa lebih mampu menyelesaikan tugas sendiri setelah menggunakan flipbook? [Hi mbak. Do you feel better when you do assignment using flipbook?]*"
- P4: "*Iya, Bu. Saya jadi lebih percaya diri buat ngerjain tugas sendiri. Kalau dulu saya sering nunggu guru kasih tahu caranya, sekarang saya coba dulu sendiri sambil lihat flipbook. [Yes, Ma'am. I become more confident to do it myself. In the past, I often waited for teacher's instruction to complete the assignment. Now, I try it myself while using flipbook.]"*
- R : "*Apakah kamu merasa tidak terlalu bergantung lagi pada instruksi dari guru? Bagaimana kamu menggunakan flipbook untuk membantu penyelesaian tugas? [Do you feel less dependent on teacher's instructions? How do you use flipbook in completing assignment?]*"
- P4: "*Iya, benar. Flipbook-nya bisa saya ulang-ulang lihat kalau ada yang nggak paham. Jadi saya bisa cari cara sendiri buat selesain tugas, tanpa harus nunggu guru terus. [That's right. Flipbook can be repeated many times. I can find my way to do assignment without teacher's instructions.]"*
- R : "*Bagaimana menurut kamu, apakah akses ke materi dan contoh di flipbook membantu kamu menemukan solusi sendiri ketika menghadapi masalah? [Does the access of learning materials and its examples in flipbook enable you to find solutions autonomously?]*"
- P4: "*Iya, sangat membantu. Ada banyak contoh di flipbook, jadi kalau ada yang susah, saya tinggal ulang lagi sampai ngerti. Kadang-kadang masalah yang saya hadapi ternyata bisa saya selesaikan sendiri setelah lihat contohnya. [Of course. There are many examples in flipbook. When I find problem, I can repeat the materials many times to obtain solution. Most of my problems can be overcome after finding its examples.]"*

4.5. Pattern of Reflection and Self-Evaluation

Students with special needs started to show their progress of reflection. Flipbook provided visual and interactive feedback which enabled them to evaluate their understanding. They learned to assess whether they understood a concept or needed to repeat it. In this case, the learning process was more sustainable. This result could be strengthened by interview transcript as followed:

- R : "*Halo, mas. Setelah belajar menggunakan flipbook, apakah kamu pernah berpikir tentang kemajuan kamu dalam memahami materi? Bagaimana perasaan kamu soal itu? [Hello. After using flipbook, do you more understand the learning material?]*"
- P5: "*Iya, Bu. Saya jadi lebih sering mikir, 'Apa saya sudah ngerti atau belum ya?' Kalau saya merasa belum, biasanya saya ulang lagi baca materinya. Rasanya jadi lebih bertahap belajarnya. [Yes, Ma'am. I often think whether I have understood or not. When I haven't understood, I usually repeat to read the material. I think the learning is more gradual.]"*
- R : "*Ketika kamu merasa belum sepenuhnya menguasai suatu materi, apa yang biasanya kamu lakukan? Bagaimana kamu tahu kapan sudah waktunya lanjut ke materi berikutnya? [When you have not mastered the material, what will you do? How do you know that you can go on the next material?]*"
- P5: "*Kalau saya masih ragu sama jawaban atau penjelasan sendiri, saya anggap belum paham. Jadi, saya balik ke materi yang sebelumnya. Tapi kalau sudah bisa jelasin sendiri dengan yakin, baru saya lanjut ke bagian berikutnya [When I feel confused of my own answers, I think that I haven't understood. So, I go back to the previous material]."*

R : "*Apa menurut kamu belajar dengan cara seperti ini, yang melibatkan refleksi atas pemahaman kamu sendiri, membuat proses belajar lebih efektif?* [Do you think that learning by conducting reflection of your understanding make the learning process to be more effective?]"

P5: "*Iya, Bu. Saya jadi lebih ngerti apa yang sebenarnya saya kuasai dan apa yang belum. Dulu saya sering belajar terus tanpa mikir, tapi sekarang lebih sadar kapan harus berhenti dan mengulang, jadi lebih efektif buat saya.* [Of course, Ma'am. I understand more about what I have mastered and not. In the past, I often studied continuously without reflecting. However, I am more aware of it now]"

The five autonomous learning patterns showed that students with special needs who utilized flipbook media in quantum learning were more independent in setting learning goals, managing learning process, taking initiative, completing assignments, and reflecting their progress. These patterns strengthened students' independence in autonomous learning context. It provided them full control of their learning process with minimal support from external parties.

5. Discussion

The autonomous learning patterns of students with special needs in quantum learning using flipbook media give positive influence that can be viewed from the improvement of students' learning independence. The involvement of quantum learning and flipbook media in autonomous learning makes students with special needs to be able to optimize their responsibility in the teaching and learning process. This is because the quantum learning approach provides more freedom to students in selecting fun learning process, so it can improve their motivation to keep learning the difficult materials [50]. Therefore, several students who are passive show a change in attitude to be more proactive [51] in the learning activities and they are more brave to ask questions when obtaining problems [52].

It is in line with a research conducted by [53] which discusses about the process of learning using quantum approach enables students to increase their independence in solving problems at SMPN 5 Surakarta. In that research, the quantum learning can motivate and make students to be confident. However, to ensure the successful of quantum learning, the teacher has to build students' focus by presenting interesting elements in the learning process.

In addition, flipbook is needed as additional learning media which facilitates teacher to visualize the material interestingly. It also enables students with special needs to understand the abstract concept and provides flexibility in repeating material based on their needs. Furthermore, flipbook is very easy to be used by student because it is simple [54]. Flipbook can be used autonomously at home, however it can also be used together at school using projector [55]. Although it is simple, flipbook becomes one of learning media which provides a meaningful correlation between students and all learning elements [56].

In a research conducted by [24], flipbook can be developed based on students' needs. The use of flipbook in the learning process for students with special needs can help students to increase their skills. Flipbook presents components needed by students with special needs. It contains interesting videos for deaf students, etc. However, that research has only focussed on validator's feedback. It has not explained students' feedback in detail.

Based on previous considerations, this study discusses how flipbook media influences the learning process for students with special needs at Indonesia. The use of flipbook in quantum learning presents qualified learning process for students with special needs. It is proven by the existence of autonomous learning patterns of students with special needs in the teaching and learning process. These patterns will create students' independence to control and manage their own learning activities. This innovation becomes a novelty for learning process at Indonesia and a reference for teacher in improving learning system for students with special needs.

6. Conclusion

This study concluded that quantum learning using flipbook media effectively created autonomous learning patterns for students with special needs at Indonesia. Flipbook media was proven to improve students' autonomous learning by setting personal goals, managing time and focus, exploring materials

autonomously, completing assignment, and conducting self-reflection. This approach strengthened student's skill to manage their learning process, improve their engagement, and motivate them. These findings supported further implementation of this learning method in inclusive education. It indicated that flipbook could be an effective media to encourage the development of autonomous and potential learning for students with special needs.

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