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Analysis Learning Profile of Students with Intellectual Disabilities in Studying the Basic Law of Chemistry Using E-LAPD Based Liveworksheets

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Abstract: This study aims to analyze the learning profiles of students with intellectual disabilities, focusing on their learning styles in studying the basic laws of chemistry using e-LAPD based Liveworksheets. The participants were three students with intellectual disabilities from SMAN 10 Surabaya. A mixed-method approach with a concurrent embedded model was employed. Qualitative data were collected through interviews and observations and analyzed using Nvivo 11 software, while quantitative data were obtained from pretest and posttest results and analyzed using bar charts and N-Gain scores to measure improvement in learning outcomes. The quantitative data also supported the qualitative analysis of the relationship between learning style tendencies and learning outcomes. The results show that student DA exhibited a kinesthetic learning style, whereas E and RY demonstrated visual learning styles. Students engagement with e-LAPD activities reflected variations in learning style preferences. Quantitative analysis indicated an increase in learning outcomes, with N-Gain scores categorized as high. Therefore, a learning style that matches students characteristics can enhance learning outcomes. Based on these findings, it can be concluded that e-LAPD based liveworksheets can assist in analyzing learning profiles, particularly learning style tendencies that influence the learning outcomes of students with intellectual disabilities.

Keywords: Basic law of chemisrty; E-LAPD; Intellecutual disability; Learning profile; Liveworksheets

Introduction

Education is a learning activity that involves teachers and students actively interacting and developing their potential and abilities for improvement (Yasir, 2022). Various schools have been established as places or means of education for everyone, without exception, including children with special needs (McKee, 2020). This is in line with the concept of inclusive education. Inclusive education is an approach that aims to provide equal learning opportunities for all students, including those with special needs and diverse backgrounds (Saleh et al., 2024). The goal of inclusive education is to provide early interventions for children with special needs and to create an environment that is friendly and accepting of differences. This principle emphasizes equal rights to access quality education regardless of physical, intellectual, social, or emotional abilities (Chairunnisa & Rismita, 2022; Deroncele-Acosta & Ellis, 2024). In line with this principle, inclusive education means opening access to various educational and social opportunities for all children, not just for

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children with disabilities or identified special educational needs (Bešić, 2020).

Students with special needs who receive education in regular or public schools are generally students with mild disabilities, such as intellectual disabilities (mental retardation). These students can engage in activities with regular students, although they may require individual learning support. Intellectual disability is a developmental disorder characterized by limitations in cognitive abilities, problem-solving skills, and adaptive behavior, leading individuals to learn more slowly, have irregular learning patterns, and experience difficulty in understanding abstract concepts (Ni'matuzahroh et al., 2021). The American Association on Mental Retardation (AAMR) states that intellectual disability severely limits an individual's functioning in adaptive behavior, which consists of conceptual, social, and practical adaptive skills. The limitations of children with intellectual disabilities result in difficulties in improving their learning, especially in the academic field (Bakhtiar, 2022).

One of the main characteristics of students with intellectual disabilities is their difficulty in retaining and recalling information, especially in subjects that require the application of abstract concepts, such as chemistry. Chemistry, which is known for its abstract and symbolic concepts, is taught with learning adjustments tailored to the individual needs of students with intellectual disabilities. In chemistry learning, one of the topics covered is the basic laws of chemistry. The material on the basic laws of chemistry consists of a combination of concepts and mathematical calculations, thus requiring high-level thinking and analysis to construct and connect the given legal concepts (Kapuung & Waworuntu, 2022), however, the cognitive achievement levels of students with intellectual disabilities remain low (Mullah et al., 2025). One of the factors closely related to students' cognitive abilities, whether they are regular students or students with intellectual disabilities, is the students' learning profile, particularly their learning style.

A learning profile is the study of a group of children that shows the average level and distribution of skills or competencies achieved by the group as they develop through each age or level (Michelle, 2019). One component of the learning profile is the learning style. Learning style is how students select, acquire, process and remember new information (Susanti et al., 2023). Students' learning styles are key to developing learning performance because each student certainly has different learning styles (Djara et al., 2023). In general, human learning styles as summarized by Mufidah (2017) are divided into 3 (three) groups, namely: visual learning styles, auditory learning styles, and kinesthetic learning styles. According to İlçin et al. (2018), learning styles are important to learn because they can support student learning success. Students with intellectual disabilities have diverse characteristics and learning style tendencies, such as visual, auditory, and kinesthetic preferences, which often differ from those of students in general (Fitria & Nadirah, 2024). The alignment of learning styles with the needs and characteristics of students with intellectual disabilities contributes positively to learning outcomes because it makes the learning process more effective and meaningful. This is in line with the research findings of Nurbaeti et al. (2015), which indicate that learning styles have a positive relationship with students' cognitive abilities. This suggests that learning styles can enhance students' cognitive abilities. Therefore, identifying the learning styles of students with intellectual disabilities is important to contribute to improving learning outcomes.

The use of learning media in the form of teaching materials such as Student Activity Sheets (LAPD), while still utilizing available digital technology, can support efforts to identify the learning style tendencies of students with intellectual disabilities in understanding lesson material, particularly chemistry. In this regard, one form of implementation is the development of an e-LAPD (Electronic LAPD), especially for basic chemistry law material, by enhancing visuals and using simple language. e-LAPD is an assignment included in learning media in electronic form that must be completed by students (Sari et al., 2022). e-LAPD is used as a teaching and learning tool in schools with the aim of improving the quality of education (Octaviani, 2017). In the development of e-LAPD, the liveworksheets platform is used as a medium to access LAPD. The e-LAPD is based liveworksheets is designed with various learning activities, such as observing images or tables, listening to concept explanations, watching educational videos, and answering questions through features that require hands-on activities like drag and drop, matching, and filling in tables or answer blanks. Through this e-LAPD, the researcher can observe various responses exhibited by students with intellectual disabilities in each learning activity. These response patterns are used as indicators in identifying tendencies of visual, auditory, and kinesthetic learning styles.

This is in line with initial observations at SMAN 10 Surabaya, an inclusive education school. It was found that the chemistry teacher and the special accompaniment teacher have never developed innovative learning media specifically designed for students with intellectual disabilities. The use of innovative learning media is important to improve the learning outcomes of students with special needs in chemistry education (Sukarmin et al., 2020). Therefore, the presence of e-LAPD based on live worksheets,

particularly in the topic of basic chemical laws, can help analyze learning styles, thereby improving the learning outcomes or cognitive achievements of students with intellectual disabilities.

Based on the description above, the focus of this research includes: (1) How is the learning profile of students with intellectual disabilities when using e-LAPD based on Liveworksheets? (2) What is the relationship between learning style tendencies and the learning outcomes of students with intellectual disabilities after using e-LAPD based on Liveworksheets? Therefore, the researcher is interested in conducting a study entitled "Analysis of the Learning Profiles of Students with Intellectual Disabilities in Learning Basic Chemistry Laws Using e-LAPD Based on Liveworksheets?"

Method

This research uses a mixed method, which is a research method that combines quantitative and qualitative methods used simultaneously in a research activity, so that more comprehensive, valid, reliable, and objective data are obtained (Sugiyono, 2017). Findings from the mixed method mutually confirm between qualitative and quantitative results, thus providing a stronger basis for researchers in making decisions and actions. The mixed method can be used to generate strong data descriptions and interpretations, make quantitative results easier to understand, or understanding the broader application of qualitative findings from small samples (Harvard Catalyst.edu., 2022). The mixed method model used is the concurrent embedded model, which is a combination of research that collects quantitative and qualitative data either simultaneously or sequentially, where one form of data plays a supporting role for the other (Creswell, 2010). The following is the research flow of the concurrent embedded model.

Problem Statement

At this stage, the emphasis is on identifying the main problems that require a deep understanding in order to formulate the problem statement. The formulation of the problem is based on observations at SMAN 10 Surabaya, and the results provided information related to chemistry learning in school for students with intellectual disabilities, the availability of teaching materials and media, the teaching methods and models applied, and the condition of students with intellectual disabilities during learning activities.

Literature Review

At this stage, the researcher further seeks and selects relevant theories that can be used to clarify the problem, provide operational definitions, and formulate hypotheses. The literature review focuses on theories regarding students with intellectual disabilities, the need for media and learning strategies, and individualised education.

Research Instrument

At this stage, to obtain data, the research instruments were developed, starting with the creation of e-LAPD based liveworksheets along with validation sheets and guidelines for interviews and observations, which function to guide the researcher in collecting data. In addition, instruments in the form of pre-tests and post-tests were created, with scores assigned for each answer. The scope of this research is focused on the use of e-LAPD for basic chemistry law, covering two subtopics, namely the law of constant comparison and law of volume comparison.

Determination of Subject

At this stage, the subjects or students who will be given treatment by the researcher to obtain data are determined. The subjects of this study are three students with intellectual disabilities at SMAN 10 Surabaya. The following is a table of information on the three students with intellectual disabilities.

Table 1. Information on Students with Intellectual Disabilities

Student	Class	Age	Gender	IQ
DA	XI	17	Male	108
E	XI	18	Female	87
RY	XII	18	Male	80

Based on the identification results from the school, the three students have an IQ (Intelligence Quotient) above the general threshold for the classification of intellectual disability, which is <70 as established by the American Psychiatric Association, 2013. However, according to the assessment criteria applied by SMAN 10 Surabaya as an inclusive education provider, these students are still categorized as having an intellectual disability because they show limitations in adaptive, social, and conceptual functioning. This provision aligns with the guidelines of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), which states that the diagnosis of intellectual disability is not determined solely based on IQ scores but must also include significant limitations in adaptive, social, and conceptual functioning (APA, 2013). Thus, this study refers to assessment results and school policies that consider the students' factual conditions comprehensively, not merely their IQ scores.

Data Collection

At this stage, qualitative data was obtained from interviews and observations, while quantitative data was obtained from pretest and posttest results. Treatment consistency was maintained by providing the same treatment during the data collection phase for each subject, which were the three students with intellectual disabilities. The following treatments were given to each student with intellectual disabilities during the research data collection process.

Pretest

The pretest is conducted to determine the initial abilities and level of understanding of students with intellectual disabilities regarding the subtopics to be studied before being provided with special learning media/interventions. The pretest instrument includes questions related to the law of definite proportions and the law of multiple proportions, presented via a web-based platform through Google Forms.

Completion of e-LAPD 1

The completion of the e-LAPD 1 aims to determine the extent of students' understanding of the concept law of constant comparison while also analyzing the learning style tendencies applied during the learning process. The researcher uses an observation sheet instrument to record the activities of students with intellectual disabilities during the completion of the e-LAPD. Through observation, the researcher can also note the tendencies of students with intellectual disabilities in various learning activities, such as observing pictures or tables, listening to concept explanations, watching learning videos, and answering questions through features that require direct activity. Observation data serves to complement the results from other instruments, such as interviews, so that the analysis of each student with intellectual disabilities learning style tendencies becomes more accurate.

Interview 1

Interviews were conducted to explore information about how students with intellectual disabilities understand the material, the types of learning activities they prefer, and the learning strategies considered most helpful during the learning process. The interview results were used to analyze the learning style tendencies of each student with intellectual disabilities after participating in learning using e-LAPD law of constant comparison based liveworksheets.

Completion of e-LAPD 2

The completion of the e-LAPD 2 aims to determine the extent of their understanding of the concept of law of volume comparison simultaneously analyzing the learning style tendencies applied during the learning process. The researcher uses an observation sheet instrument to record the activities of students with intellectual disabilities during the completion of the e-LAPD. Through observation, the researcher can also note the tendencies of students with intellectual disabilities in various learning activities, such as observing pictures or tables, listening to concept explanations, watching learning videos, and answering questions through features that require direct activity. Observation data serves to complement the results from other instruments, such as interviews, so that the analysis of the learning style tendencies of each student with intellectual disabilities becomes more accurate.

Interview 2

Interviews were conducted to explore information about how students with intellectual disabilities understand the material, the types of learning activities they prefer, and the learning strategies considered most helpful during the learning process. The interview results were used to analyze the learning style tendencies of each student with intellectual disabilities after participating in learning using e-LAPD law of volume comparison based liveworksheets.

Posttest

The posttest was conducted with the aim of determining the learning outcomes of students with intellectual disabilities after participating in learning using e-LAPD based liveworksheets. Similar to the pretest, the posttest also used a posttest instrument covering questions related to the law of constant comparison and law of volume comparison, presented online through the Google Form platform. The posttest scores were then compared with the pretest scores to determine the improvement in learning outcomes of students with intellectual disabilities after using e-LAPD tailored to each student's learning style.

Data Analysis

The research data obtained still needs to be analyzed. Qualitative data in the form of interview recordings are used to examine the learning profiles, particularly the learning style tendencies of each student with intellectual disabilities. The interview recordings are then transcribed into text and used as documents analyzed using Nvivo 11 software with the coding query matrix feature. This feature is employed to analyze and compare coding results across categories or themes that emerge from the interview data. Using this feature, researchers can identify patterns of association among the learning styles of students with intellectual disabilities (visual, auditory, and kinesthetic). This analysis allows researchers to gain a deeper

understanding of each student with intellectual disabilities learning style tendencies.

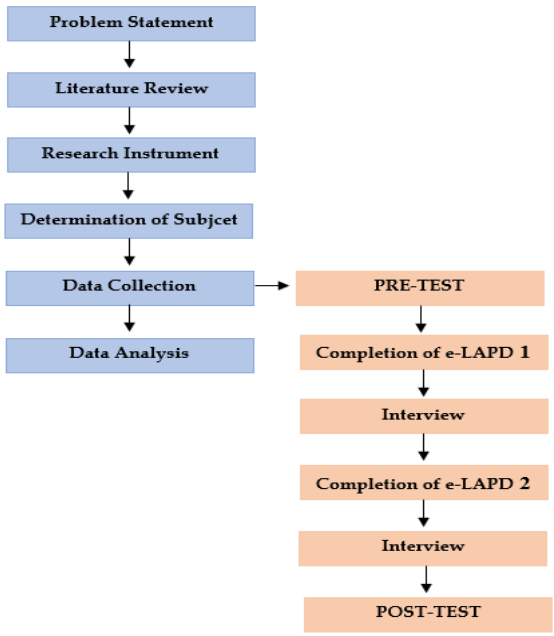

Figure 1. Concurrent embedded model flow

The quantitative data obtained from the pretest and posttest scores were analyzed using bar charts to determine the improvement in learning outcomes of each student with intellectual disabilities on the subtopics of the law of constant comparison and law of volume comparison. This analysis not only illustrates the changes in scores before and after learning using e-LAPD based on liveworksheets, but is also used to strengthen the qualitative analysis regarding the relationship between learning style tendencies and the learning outcomes of each student with intellectual disabilities. Furthermore, to reinforce the results of the quantitative analysis, an analysis was also conducted using the N-Gain score calculation. The N-Gain score is used to determine the improvement in pretest and posttest scores of students with intellectual disabilities. The following is the formula for the N-Gain score. The calculated value (g) is interpreted according to the criteria in Table 2.

$$g = \frac{posttest\ score - pretest\ score}{ideal\ score - pretest\ score} \quad (1)$$

Tabel 2. N-gain Score Interpretation Criteria (Hake, 1998)

Value range	Category
G ≥ 0.7	High
0.3 ≤ G < 0.7	Medium
G < 0.3	Low

Based on these criteria, learning outcomes are considered improved if there is an increase in the N-gain score of 0.3 ≤ G < 0.7 with a moderate category and an N-gain score of G ≥ 0.7 with a high category. Thus, quantitative analysis results can strengthen qualitative findings.

Result and Discussion

The research results were obtained based on analyzed data. These research results successfully answer all the research questions that were established.

Learning Profile of Students with Intellectual Disabilities

The observation results show the characteristics of the three students with intellectual disabilities, including a general description of each student, their learning abilities, and the obstacles they experience.

DA is a child with specific learning difficulties caused by neurological disorders related to language processing. DA still struggles with written language skills, so his writing is sometimes inaccurate. In addition, DA tends to be inflexible and has low emotional control, making it difficult to accept feedback and potentially prone to explosive behavior. This condition indicates that DA has double disabilities, namely intellectual disability and ADHD (Attention Defict Hyperactivity Disorder).

E has a fairly adequate thinking ability but shows good enthusiasm for learning. E tends to lack self-confidence and needs time to adjust. Their interaction and communication skills are fairly good, but their emotional development tends to be influenced by their mood.

RY has relatively low cognitive abilities and concentration. RY tends to have an open, childish, quite aggressive personality, and often wants to gain attention and assert their own will. In addition, RY still lacks the ability to deal with new problems.

Based on the explanation of the characteristics of students with intellectual disabilities, such characteristic data is used to understand the differences in each student's characteristics so that teachers can adjust the learning according to their special needs. In addition, the development of e-LAPD is designed with consideration of the students' characteristics, so this media provides interactive features that meet their needs. Thus, e-LAPD not only serves as a digital learning tool but also as a medium that supports the individual learning needs of students with intellectual disabilities.

The analysis results using the matrix coding query feature in Nvivo 11 software indicate the learning style tendencies of each student with intellectual disabilities when implemented in learning using the e-LAPD on the

law of constant comparison and the law of volume comparison based liveworksheets.

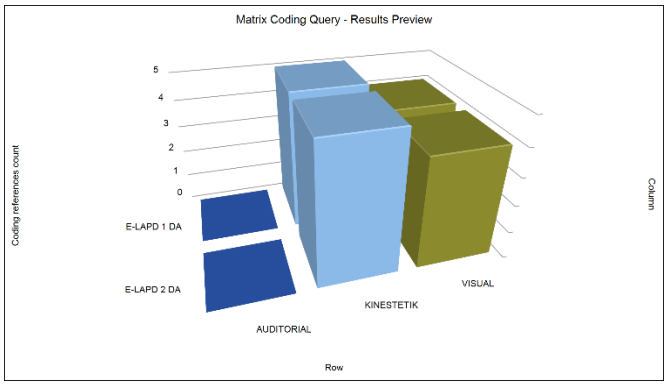

Figure 2. Learning style diagram DA

Based on the diagram above, the learning style that DA tends to apply when learning using e-LAPD on the law of definite proportions and the law of combining volumes is a kinesthetic learning style, compared to auditory and visual learning styles. This is also evidenced by observations during learning using e-LAPD, showing that DA finds it difficult to stay still for long periods, prefers to try things on their own rather than listening to explanations, and finds it easier to remember and understand lessons through activities that involve movement or hands-on engagement. For example, DA is able to recall the statements of the law of constant comparison and law of volume comparison while moving his hands.

In addition, DA shows interest in the features on liveworksheets that involve interactive activities, such as drag and drop, matching, and completing tables or answer fields, because they are perceived as feeling like play while learning. Therefore, DA prefers to directly work on the exercises to understand the subtopic concepts rather than reading material summaries or watching instructional videos. Therefore, DA prefers to directly work on problems to understand and learn the subtopic concepts rather than reading material summaries and watching videos. This finding aligns with the research by Papilaya et al. (2016), which states that individuals with this learning style grasp lessons more easily when they move, touch, or take action. This indicates that the use of e-LAPD can support the kinesthetic learning style of students with intellectual disabilities by providing interactive activities that allow them to learn through movement and direct experience. Thus, e-LAPD serves not only as a digital learning medium but also as a means that is adaptive to the learning needs of students with kinesthetic characteristics. The following are the results of the E-LAPD assessment showing that DA has an interest in features that reflect a kinesthetic learning style.

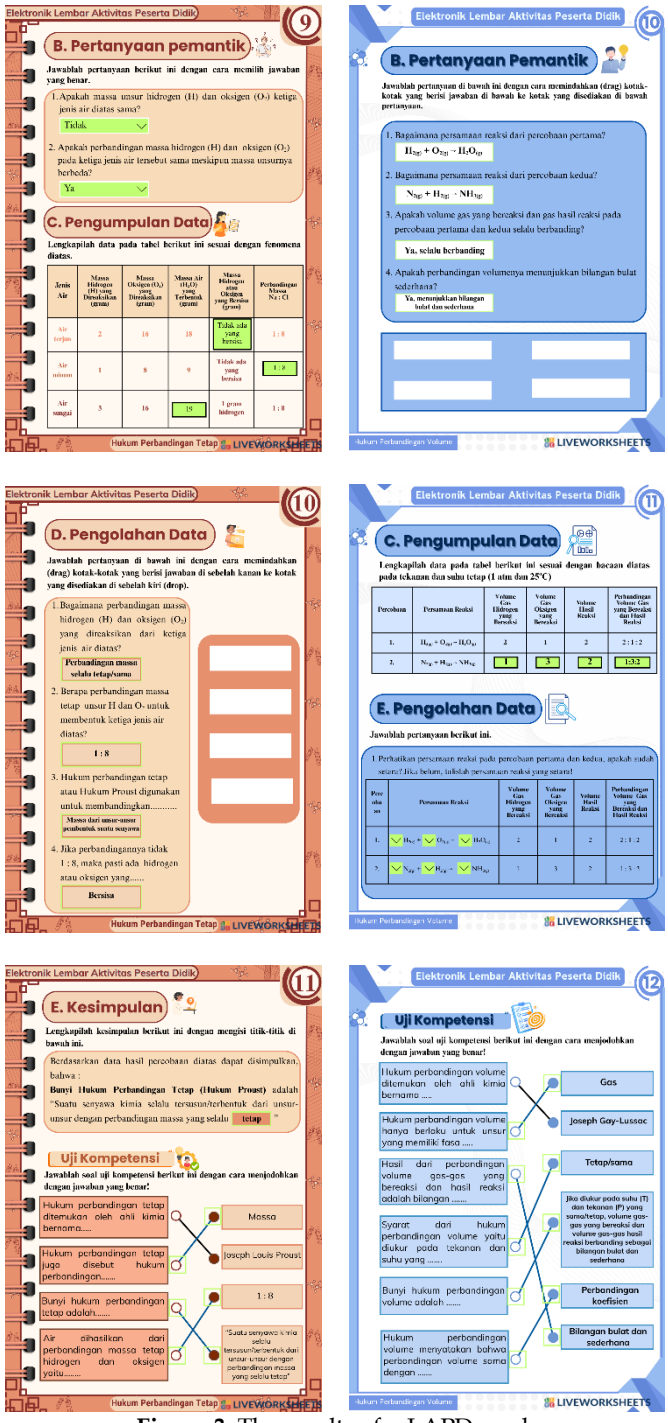

Figure 3. The results of e-LAPD work

Based on the figure 4, the learning style that E tends to apply during learning using the e-LAPD of the law of constant comparison and law of volume comparison is a visual learning style, compared to auditory and kinesthetic learning styles. Although, the visual learning style is more dominantly applied in the e-LAPD the law of constant comparison compared to the e-LAPD the law of volume comparison. According to E, the presentation of visual displays on both e-LAPDs makes learning more interesting and helps to understand the concepts of these

subtopics. This is also proven through observation results during learning using the e-LAPD, where E showed interest in the visual displays presented such as colored text, images, and animations in learning videos. Thus, E is more interested in reading the summary of the material rather than completing worksheets that involve hands-on activities because his right hand is injured and cannot be moved.

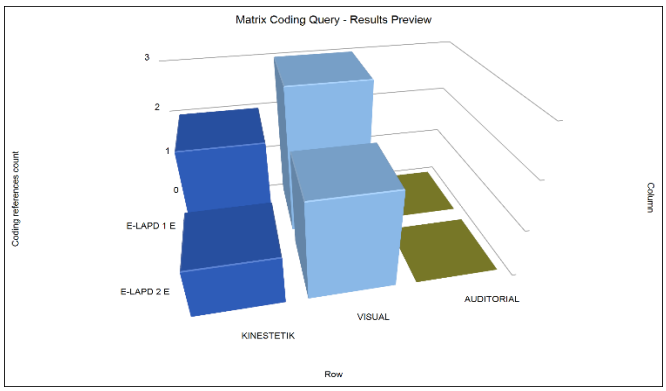

Figure 4. Learning style diagram E

In addition, E is more focused when learning media are presented with clear and colorful visuals. This findings are in line with the results of Bire & Geradus (2014) research, which states that a visual learning style helps students focus and concentrate on the material being studied through activities involving seeing, such as observing tables, animations, and interesting images. Therefore, the use of e-LAPD that combines visual elements can support visual learning styles, thereby helping to understand concepts through concrete visual representations.

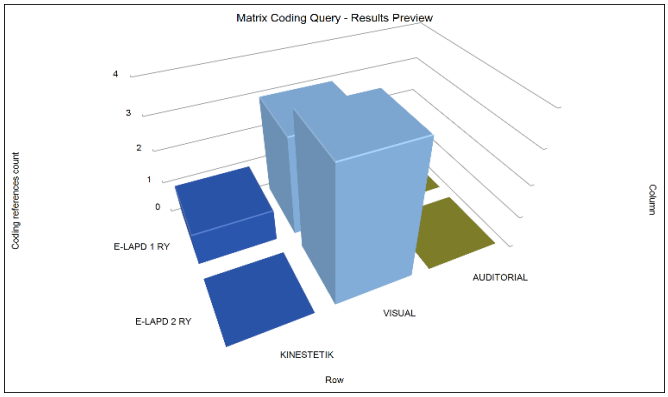

Figure 5. Learning style diagram RY

Based on the diagram above, the learning style that RY tends to apply when learning using the e-LAPD for the law of constant comparison and law of volume comparison is a visual learning style, compared to auditory and kinesthetic learning styles. However, the visual learning style is more dominantly applied in the e-LAPD the law of volume comparison compared to the e-LAPD the law of constant comparison. According to RY, the presentation of visual displays on both e-LAPDs makes learning more interesting and helps in understanding the subtopic concepts. This is also proven through observation results during learning using the e-LAPD, as RY shows interest in the visual displays presented, such as images and animations in learning videos.

In addition, RY tends to pay more attention to the material when it is presented through visually engaging displays rather than completing worksheets that involve hands-on activities, because RY finds it difficult to concentrate during learning. This findings are in line with the results of Bire et al. (2014) research, which states that a visual learning style helps students focus and concentrate on the material being studied through activities involving seeing, such as observing tables, animations, and interesting images. Therefore, the use of e-LAPD that combines visual elements can support visual learning styles, thereby helping to understand concepts through concrete visual representations.

The following is the E-LAPD design that shows that E and RY are interested in visual displays that reflect a visual learning style.

Figure 6. e-LAPD design

The Relationship Between Learning Styles and Learning Outcomes of Students with Intellectual Disabilities

The learning outcomes of the three students with intellectual disabilities were obtained through pretest and posttest results on questions the law of constant comparison and the law of volume comparison.

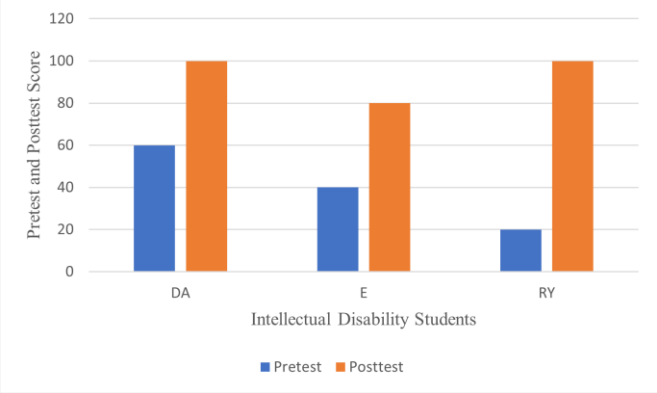

Figure 7. Bar chart pretest and posttest score

Based on the bar chart, the pretest and posttest results show a significant increase in scores for the three students with disabilities in the subtopics of the law of constant comparison and law of volume comparison. The maximum score for the pretest and posttest on the is 100. DA has a kinesthetic learning style, scored 60 on the pretest, and improved on the posttest by achieving a maximum score of 100. E has a visual learning style, scored 40 on the pretest, and improved on the posttest by achieving a score of 80. RY has a visual learning style, scored 20 on the pretest, and improved on the posttest by achieving a maximum score of 100. This indicates that the learning styles applied by each student with intellectual disabilities during learning using e-LAPD law of constant comparison and law of volume comparison affect their learning outcomes. This is in line with the research of Irawati et al. (2021), which states that learning styles have a significant influence on students' learning outcomes. Learning styles that match the characteristics of students can improve the learning outcomes of students with intellectual disabilities.

Table 3. Pretest and Posttest Scores for the Subtopic of the Law of Constant Comparison

Student	Pretest Scores	Posttest Scores
DA	20	40
E	20	40
RY	0	40

After presenting the pretest and posttest score diagrams for both subtopic, a table of pretest and posttest scores for the subtopic law of constant comparison is also presented. The table above shows that the three students with intellectual disabilities experienced an increase in their pretest and posttest scores on the subtopic ot the law of constant comparison. DA and E, who initially obtained a score of 20 on the pretest, increased to 40 on the posttest. Meanwhile, RY who initially obtained a score of 0, also increased significantly to 40. The maximum score on the pretest and posttest questions on subtopic of the law of constant comparison was 40. This shows that the three students with intellectual disabilities succeeded in achieving an increase in conceptual understanding with maximum results on the posttest after using the e-LAPD for subtopic the law of constant comparison.

Table 4. Pretest and Posttest Scores for the Sub-Material of the Law of Volume Comparison

Student	Pretest Scores	Posttest Scores
DA	40	60
E	20	40
RY	20	60

After the pretest and posttest scores of the law of constant comparison were presented, a table of pretest and posttest scores of the subtopic the law of volume comparison was also presented. The table above shows that the three students with intellectual disabilities experienced an increase in pretest and posttest scores on the subtopic of the law of volume comparison. DA, who initially obtained a score of 40 on the pretest, increased to 60 on the posttest. E, who initially obtained a score of 20 on the pretest, increased to 40 on the posttest. RY, who initially obtained a scored 20 on the pretest, increased to 60 on the posttest. The maximum score on the pretest and posttest questions on the subtopic of the law of volume comparison was 60. This shows that DA and RY increased conceptual understanding with maximum results on the posttest after using e-LAPD on the subtopic of the law of volume comparison.

In addition, to strengthen the quantitative data results, the pretest and posttest results of students with intellectual disabilities were recapitulated and analyzed using the N-Gain score to determine the improvement in their learning outcomes. The following are the N-Gain test data results of each student with intellectual disabilities' learning tests, as shown in table 5 below.

Table 5. Test Result Data on the Learning of the Law of Constant Comparison and Law of Volume Comparison

Student	Pretest score	Posttest score	N-gain score	Category
DA	60	100	1	High
E	40	80	0.5	Medium
RY	20	100	1	High

Based on the N-Gain data of pretest and posttest scores on the questions about the law of constant ratios

and the law of volume ratios, there is one student with a disability (E) who obtained an N-Gain score in the range of $0.3 \leq G < 0.7$ with a moderate category, indicating that E is learning outcomes improved at a moderate level. In addition, 2 students (DA and RY) obtained N-Gain scores in the range of $G \geq 0.7$ with a high category, indicating that the learning outcomes of DA and RY improved at a high level.

Based on the results of the quantitative analysis above, it is known that the learning style of each student with intellectual disabilities affects the learning outcomes obtained. This shows that analyzing the learning style of each student, especially students with intellectual disabilities, is very important to improve the effectiveness of the learning process and help students achieve optimal learning outcomes.

Conclusion

The research results indicate that the implementation of e-LAPD based liveworksheets in learning the basic laws of chemistry, particularly the subtopics of the law of constant comparison and law of volume comparison, is able to assist in analyzing the learning profiles of students with intellectual disabilities, especially their learning style tendencies. Students interest in various learning activities on e-LAPD, which align with their individual preferences, supports the analysis results that reveal differences in tendencies among visual, auditory, and kinesthetic learning styles. Learning styles that suit the characteristics of each student with intellectual disabilities influence the improvement of learning outcomes in the subtopics the law of constant comparison and law of volume comparison. This is demonstrated by the increase in pretest and posttest scores based on bar charts and N-gain scores, where the majority of students reached the high category and a small portion reached the medium category.

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Author Contributions
W.A.R. served as the primary author responsible for article writing review, and editing, as well as contributing to the conceptualization of the research idea; H.N. acted as a data validator and informant; M.P.S. contributed to research administration and supervised the data collection process; R. contributed to data validation and methodology; D.N. acted as a supervisor, provide direction, and help input/suggestions.

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Conflicts of Interest
The author sincerely declares that no conflict of interest could affect the results objectivity and integrity.

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