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# Exploring college-student insights on learning aids and practicum equipment

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ABSTRACT

Reflecting on the use of learning media will help students decide on a quality and user-friendly design. Thus, this study examines the experiences of second-year students in the Buddhist Religious Education program at Institut Nalanda who participated in the online distance "Learning Media" course during the 2023-2024 academic year. The researcher aims to understand the students' perspectives on the impact of instructional and practical equipment on their learning. This study used a case study technique, specifically the classroom research strategy, to collect data from 37 student forum posts on Google Classroom. Following a solitary session of asynchronous lectures, comprising a teaching module and three audio recordings, the students produced these postings. The researcher employed qualitative descriptive analysis, utilizing QDA Miner, to discern the principal themes and conclusions derived from the data. The data indicates that students had a variety of experiences using both instructional and practical equipment. Students experience the use of teaching aids to facilitate science experiments, classroom demonstrations, and accounting learning and support arts and sports classes. This study found that students have positive impressions of these media based on their learning experiences. Reflecting on their own learning experiences can inspire students to develop their learning media as a class project. The findings of this study can assist educators in designing learning environments that more effectively prepare students for academic and professional challenges. Research on other cohorts can be conducted as longitudinal studies. Comparing students' experience of on-site and online classes can also be done as a future study.



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## INTRODUCTION

Enhancing learning outcomes and skill mastery depends on various elements, such as the utilization of effective learning media, engaging instructional activities, and students' willingness to initiate learning (Lubis et al., 2023). This concept corresponds with Gagné's instructional concepts, emphasizing the necessity of engaging learners' attention through suitable and captivating learning material (Firda & Anam, 2022; Gagne et al., 2005). The optimal use of educational materials and media within institutions can enhance the learning experience and improve instructional effectiveness (Chernetsov et al., 2022; Widhanarto et al., 2024). In response, numerous educators

have integrated various media, including instructional and practical equipment, which enhance effective learning and actively involve students in experiential learning opportunities. Merrill's methodology endorses this by claiming that selected learning media should facilitate knowledge discovery and the cultivation of practical skills (Irwansyah, 2021; Merrill & Frick, 2020; Tazkia & Suherman, 2016).

Prior research has shown that the utilization of teaching aids and practicum tools can improve students' capacity to apply theoretical knowledge through active engagement and skill development (Sinaga et al., 2023; Vera & Primasari, 2022). John Dewey's idea of "learning by doing" posits that students acquire significant experience and enhance their theoretical comprehension by active engagement with practical instruments and educational resources (Mutrofin, 2022). This claim is especially pertinent for students pursuing disciplines such as physics, mathematics, and vocational education, where abstract concepts may be difficult to comprehend without tangible imagery (Byrne, 2022; Craik, 2023). Consistent with Vygotsky's social constructivism, collaborative interactions and experiential learning supported by instructional aids enhance students' ability to internalize and utilize acquired knowledge, equipping them for real-world social responsibilities (Newman & Latifi, 2021; Pathan et al., 2018).

This study seeks to examine the influence of learning aids and practical equipment on the educational experience of students who participated in Learning Media lectures at Institut Nalanda. Data gathered from students' reflections in Google Classroom regarding their experiences with these technologies from elementary to high school will yield insights into the efficacy of experiential learning. Kolb's experiential learning theory (Morris, 2020), based on direct encounters and reflection, encourages students to describe and assess the practical methods they have used. This reflective practice seeks to improve students' planning and implementation skills related to teaching aids that can assist diverse educational disciplines, including science, art, and vocational training (Datta, 2023).

This study is of enormous significance in instruction, particularly in areas where practical skills are crucial, as it has the potential to improve teaching methods (Giyanti et al., 2024; Leny et al., 2024). By comprehending students' learning experiences with instructional aids and practical tools, educators can customize their methodologies to enhance student engagement and information retention. This study may also mitigate obstacles in abstract conceptual learning by employing practical methods that enable students to visualize and apply their knowledge proficiently. Pre-survey results and related literature show that students consistently said that instructional aids like globes, maps, and anatomical models helped them understand difficult subjects much better, while practical tools in science, like microscopes and lab equipment, greatly improved their practical skills (Mutrofin, 2022; Quay et al., 2022).

The primary objective of this study is to discover and advocate for the optimal utilization of learning aids and practicum tools that enhance long-term knowledge retention and practical skill development. It aims to promote instructional practices that integrate these resources with contemporary educational theories and student-centered methodologies. The findings of this study can assist educators in designing learning environments that more effectively prepare students for academic and professional challenges.

## METHOD

This study implemented a classroom case study design to undertake a comprehensive, contextually rich examination of the participants' learning experiences. The case study approach Yin (2018) used helped the researcher narrow down and study the unique traits of the chosen students in the Learning Media course of the Institut Nalanda online distance learning program. The Academic Information System on campus reveals a total of 46 students enrolled in the Learning Media class, but only 37 of them participated in the posting. Therefore, this study only focused on students who engaged in a reflective learning exercise, which served as the principal data source.

Before submitting their reflections, students interacted with the course material via two learning modalities: e-modules and audio. The e-modules were accessible via Google Classroom as

downloadable PDF files, while the audio, each lasting no more than seven minutes, offered an alternative to text-based learning for students who favored audio content (see Figure 1). This multimodal strategy aligns with Gagné's ideas, which promote the utilization of diverse media to accommodate various learning preferences (Firda & Anam, 2022; Gagne, 2013). After reviewing these materials, the instructor assisted students in participating in a reflective exercise where they addressed a question about their experiences with educators using instructional aids and practicum tools in the classroom. The reflection guidelines required students to submit their responses in the comments within two weeks, consisting of 5-8 phrases, each with a maximum of 12 words. Google Forms and prompts for reflection served as the instrument and the way data was collected with guided written interviews.


Figure 1. Learning Media Google Classroom

The students' reflection posts were copied from Google Classroom into a notepad and saved as a text file (.txt). This file was used as the main data source for the qualitative analysis. The text file was subsequently imported into QDA Miner (see Figure 2), a qualitative data analysis software, to enable systematic coding and thematic analysis. In QDA Miner, tools such as keyword conversion and word cloud generation facilitated the identification of subthemes and the development of a codebook (Derobertmasure & Robertson, 2014; Miles et al., 2020). To ensure data accuracy, the frequency of keywords was corroborated by comparing the original keyword data with the word cloud generated in QDA Miner, a crucial step in qualitative data validation through triangulation, which entails cross-referencing several sources to improve dependability.

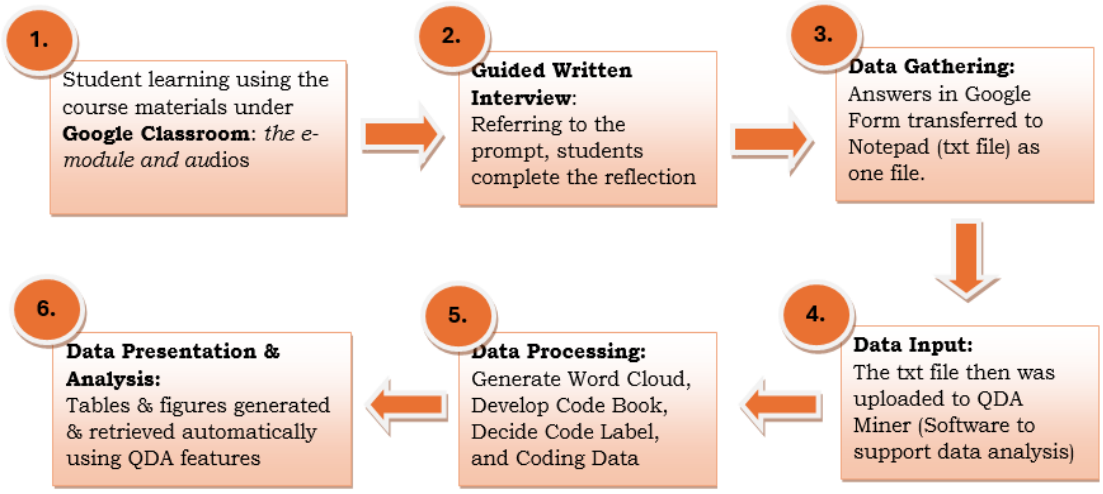



Figure 2. Flowchart of this Study

Based on the frequency and context of keywords, the codebook developed two main themes: "learning aids" and "practicum equipment," each containing subcodes that reflected specific categories of learning media. The operational definitions of sub-themes referenced authoritative sources, such as *Kamus Besar Bahasa Indonesia* (KBBI) and the Cambridge Dictionary. The researcher consulted blog articles and other scientific sources to provide additional clarity when necessary. The researcher also summed up the results and shared them with a small group of participants after the initial coding and thematic analysis. This was done to make sure the interpretation was correct and to improve the reliability of the data (Ajemba & Arene, 2022; Donkoh, 2023; Thomas & Oloyede, 2020).

The study applied several data analysis techniques, including frequency counting, word cloud generation, and theme coding, to enhance the depth and reliability of the results. Frequency counting allowed quantitative insights into recurring themes and key terms within the participants' reflections. Word cloud generation provided a visual representation of prominent keywords, which assisted in thematic identification and reinforced the consistency of subtheme development within the dataset. Additionally, theme coding enabled a more detailed interpretation of the students' experiences with different learning aids and practicum tools. By utilizing multiple techniques, the study aimed to achieve a comprehensive understanding of the data and strengthen the accuracy of findings from multiple analytical perspectives (Acosta et al., 2020; Salaria & Balu, 2023). All these data analysis processes can be easily done using the features offered by QDA Miner. Data produced in the form of tables and diagrams can also be automatically retrieved with features available in the application.

Ethical considerations were essential to this study. Confidentiality was strictly maintained by anonymizing all data to protect participant privacy. Participation was entirely voluntary, with students given the freedom to decide whether to share their reflections on learning experiences. Research ethics adhered to the standards recommended by the American Psychological Association, ensuring that all procedures followed established ethical principles and upheld the integrity of the research process (American Psychological Association, 2019).

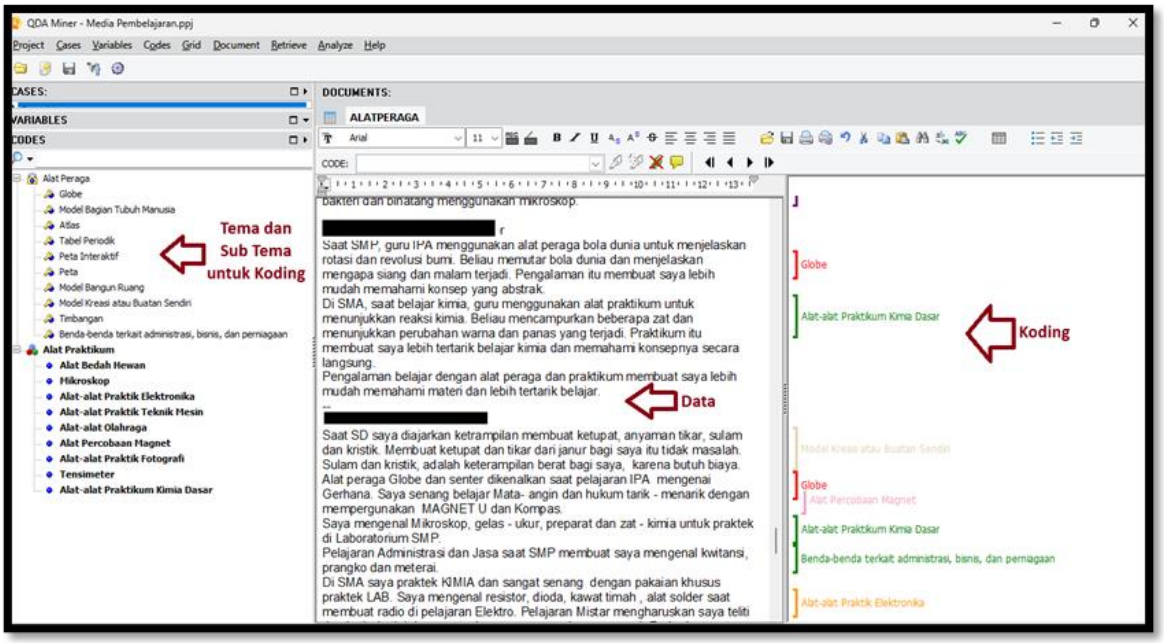



Figure 3. QDA Miner Coding Features

This structured approach to data collection, analysis, and ethical management provides a reliable foundation for interpreting participants' reflections on learning aids and practicum tools within their educational journey. This study's methodology validates the effectiveness and influence of these instructional tools, providing valuable insights for their effective integration into educational practices.

## RESULTS AND DISCUSSION

### Results

The QDA Miner data analysis system transformed the data from 37 participants into text documents for analysis. The frequency analysis and word cloud creation from this software are essential for identifying the most often cited keywords in participant statements. The analysis of word frequency relevant to the research objectives yielded the 10 most cited terms, with occurrences varying from six to twenty-two times. The terms ranked by frequency from highest to lowest are maps (22 occurrences), sphere and globe (13 occurrences each), magnet and model (12 occurrences each), Atlas (10 occurrences), microscope (9 occurrences), board (8 occurrences), and machinery and electronics (7 occurrences each). QDA Miner produces a word cloud (refer to Figure 3) to further evaluate the results and provide a visual depiction of the data.

Keyword mapping and frequency analysis establish the foundation for theme identification in data coding. The data were classified into two primary categories: learning aids and practical equipment. Each category is subdivided into sub-codes, comprising ten sub-codes for learning aids and nine for laboratory equipment.

The globe frequently serves as a medium that conveys an impression to the participants. Most participants claim that they primarily use these props to explain various geographical locations on the earth's surface. Moreover, the globe is essential for illustrating the Earth's rotation, the variations of day and night, and the phenomenon of eclipses. The actual utilization of globes has facilitated participants' comprehension in geography and science lectures, enhancing their ability to comprehend and grasp astronomical topics. Participants frequently referenced atlases and maps that are intimately associated with the globe. They assert that atlases examine the geographical positioning of seas, oceans, and nations. These two media have elucidated the disparities in magnitude and size among countries, rendering abstract geographic data more tangible. The instructor additionally illustrates a map on the chalkboard to depict the equator, the placement of the continents, and the positioning of the oceans. The image elucidates the interconnections among many geographical elements.


Figure 4. Word Frequencies and Word Cloud

Despite infrequent utilization, interactive maps constitute a significant element in the perspectives of participants. Interactive digital maps require supporting technologies, such as computers and projectors, to enable dynamic presentations that effectively engage students in their use. Furthermore, local maps, including sub-district and city maps, facilitate participants' engagement with their immediate surroundings and serve as a tool for assessing map-related skills.

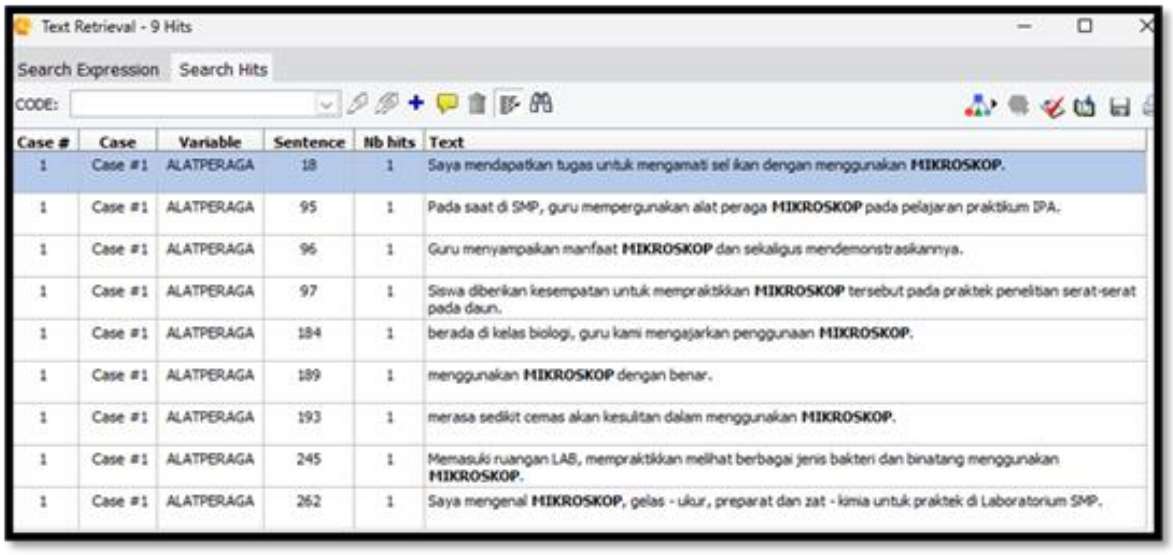
Another frequently used educational tool is the model of human anatomy. Models of these anatomical structures are crucial for the study of anatomy and physiology. These models also elucidate the anatomy and function of many organs and systems inside the human body. Participants indicated that their instructors employed this model to describe human skeletal anatomy, dermal

layers, cerebral structures, visual organs, and the gastrointestinal system. Providing 3D representations of these components will enhance students' comprehension of human body functionality.

The spatial construction model is crucial in mathematics education, particularly in facilitating the calculation of the volume of three-dimensional figures. These models assist students in comprehending abstract notions of space and volume through the firsthand observation of objects. Physics employs spatial models to illustrate principles like gravity and vertical motion, allowing students to observe these forces in action and improve their understanding of their effects.

The periodic table serves as a crucial educational tool in the field of chemistry. Participants recalled an extensive periodic table in the classroom utilized by the teacher to elucidate the properties and interrelations of chemical elements. Participants indicated that the periodic table enhanced their ability to recall and comprehend the order of elements, atomic structure, and interactions throughout the Chemistry session. Moreover, scales are evident in the reflections provided by the participants. Educators utilize scales to instruct unit conversions, elucidate the functionality of different scales, and provide students with the opportunity to practice mass measurement. Participants develop practical abilities in measuring and comprehending weight and mass, which are essential in everyday life.

Participants should utilize readily accessible office administration tools, such as stamps and receipts, to enhance their understanding of administration and commerce. This medium facilitates the acquisition of knowledge regarding trading, management, and recordkeeping operations for commercial applications in real-world contexts. HVS typewriters and paper offer participants practical experience in business mail administration before utilizing a computer. Participants said that teachers often create their instructional materials for specific lessons. Teachers employ bamboo slats and bottle caps to enhance counting activities in mathematics education. During physics lessons, participants utilize balls, strings, and flashlights to comprehend concepts such as gravity and light. Participants also identified mats and bamboo as materials for skill instruction. Educators have adapted an innovative pedagogical instrument by integrating spheres and inclinations to illustrate Newton's Laws. This model assists participants in recognizing the principles of physics in real-world contexts, enhancing their comprehension of the theories that elucidate motion and force.




| Case # | Case | Variable | Sentence | Nb hits | Text |
|---|---|---|---|---|---|
| 1 | Case #1 | ALATPERAGA | 18 | 1 | Saya mendapatkan tugas untuk mengamati sel ikan dengan menggunakan **MIKROSKOP**. |
| 1 | Case #1 | ALATPERAGA | 95 | 1 | Pada saat di SMP, guru mempergunakan alat peraga **MIKROSKOP** pada pelajaran praktikum IPA. |
| 1 | Case #1 | ALATPERAGA | 96 | 1 | Guru menyampaikan manfaat **MIKROSKOP** dan sekaligus mendemonstrasikannya. |
| 1 | Case #1 | ALATPERAGA | 97 | 1 | Siswa diberikan kesempatan untuk mempraktikkan **MIKROSKOP** tersebut pada praktek penelitian serat-serat pada daun. |
| 1 | Case #1 | ALATPERAGA | 184 | 1 | berada di kelas biologi, guru kami mengajarkan penggunaan **MIKROSKOP**. |
| 1 | Case #1 | ALATPERAGA | 189 | 1 | menggunakan **MIKROSKOP** dengan benar. |
| 1 | Case #1 | ALATPERAGA | 193 | 1 | merasa sedikit cemas akan kesulitan dalam menggunakan **MIKROSKOP**. |
| 1 | Case #1 | ALATPERAGA | 245 | 1 | Memasuki ruangan LAB, mempraktikkan melihat berbagai jenis bakteri dan binatang menggunakan **MIKROSKOP**. |
| 1 | Case #1 | ALATPERAGA | 262 | 1 | Saya mengenal **MIKROSKOP**, gelas - ukur, preparat dan zat - kimia untuk praktek di Laboratorium SMP. |

Figure 5. QDA Miner Code Retrieval Feature

The diverse educational tools identified by the participants in this study have demonstrated their efficacy in enhancing the quality of education. Globes and maps for the study of geography and anatomical models for biology, linking abstract principles to practical, real-world applications. Interactive and digital tools, however seldom referenced, possess significant promise as media for advancement in contemporary learning designs.

The readiness of educators to adapt learning aids reflects their commitment to a creative and effective teaching methodology, ensuring that lessons are engaging and comprehensible for learners. The utilization of diverse instructional resources across several disciplines demonstrates educators' capacity to adjust their pedagogical inventiveness to deliver quality education to students. The use of learning aids, as shown by participant responses, confirms that media can enhance the dynamism and efficiency of the learning environment, hence improving educational results for learners.

Practicum tools are essential for bridging theoretical knowledge with practical application. Multiple fields and educational tiers employ practicum instruments. This medium enables students to engage actively in experiential learning, cultivate a profound comprehension, and enhance their proficiency in utilizing work aids. Despite variations in accessibility and cost-effectiveness, participants consistently identify essential resources that facilitate their learning process.

The microscope is the most frequently referenced practical tool, rendering it highly instructive in science classes, particularly in biology. The participants employed microscopes to examine various subjects, including fish cells, leaf fibers, microorganisms, and bacteria. These findings show that microscopes are essential for comprehending cell structure and biological processes, which are core concepts in biology education. Microscopes enable students to examine the intricate features of creatures, facilitating a profound comprehension of biodiversity and environmental complexity. By examining these minuscule components of organisms, learners can cultivate an appreciation for the complexities of life forms and attain a more profound comprehension of the essential roles that living entities fulfill, despite their existence as invisible cells without assistance. This practical knowledge is essential for rendering abstract biological concepts more tangible and comprehensible.

The participants mentioned conducting experiments with the microscope to understand the properties and chemical reactions, but they didn't specifically mention the tool they used during the Chemistry session. Participants noted the utilization of practical instruments to evaluate the magnetic properties of items, which significantly enhanced their comprehension of magnetism and its practical applications. We acknowledge that magnets are beneficial for understanding cardinal directions and the functionality of compasses, which are crucial for imparting navigation and orientation abilities.

Chemical studies frequently note chemical reactions, variations in temperature, and alterations in color. Respondents did not specify the equipment utilized, although they emphasized the necessity of the experiment to get an understanding of chemical processes. Participants' direct experience enhances their comprehension of intricate chemical principles and fosters critical thinking and problem-solving abilities pertinent to the subjects examined. Participants clarified the use of electronic devices during educational activities at the school. Participants highlighted in their reflections that utilizing the basic electronic practicum device alleviates concerns regarding the hazards associated with the equipment. Electronic devices, including soldering tools, power generation equipment, and other components and instruments, are crucial for the assembly and comprehension of electronic circuits; hence, they facilitate knowledge in the field of electronics.

Practical engagement enhances participants' comprehension of electrical properties and the functionality of electronic devices. Active engagement in basic practicums during education enables students to enhance their comprehension of electronic principles, develop their technical skills, and cultivate confidence in operating electronic devices. Students aspiring to jobs in electronics and electrical engineering particularly gain from obtaining this practical expertise. Participants who attended vocational school reported utilizing specialized practical tools pertinent to their specific fields of study. Participants who study machines utilize various devices to comprehend their activities and operations. These practical experiences are crucial for vocational training as they provide learners with the skills required to operate and maintain machines across various industrial settings.

One individual, before attending a nursing vocational high school, acknowledged practicing blood pressure monitoring with a sphygmomanometer. This instrument is crucial for educating healthy students to accurately monitor and evaluate patients' vital signs. Students receive practical training with medical devices, ensuring they are well-prepared for clinical environments and capable of providing competent patient care.

Participants who had experience using practical equipment in the chemistry and biology labs demonstrated a variety of tools to aid in their scientific practicum. The chemistry laboratory employs practical instruments to examine and assess chemical reactions, temperature variations, and color

changes. These experiments facilitated their comprehension of the properties of various substances and the fundamental principles that regulate chemical interactions. Participants also recounted their experiences of avian dissection in the biology laboratory. This surgery is conducted to investigate the anatomy and physiology of the avian species. Dissecting the specimen enables participants to visually analyze and comprehend the internal anatomical structure of living organisms and their physiological activities. This pragmatic method enhances their comprehension of biological systems and processes.

Practicum tools possess broader applications beyond scientific and vocational fields. Participants also indicated that practice tools aided them in sports and skills instruction. One participant recounted her experience utilizing volleyball in a physical education lesson, highlighting the significance of the ball in imparting her volleyball skills. Sports equipment promotes the cultivation of students' physical abilities, encourages comprehension of collaboration, and improves their grasp of the rules and tactics pertinent to various activities.

In the domain of photography, participants indicated their engagement in the use of the camera without specifically referencing further specialist equipment. Cameras are essential in photography education, enabling students to understand composition, exposure, and several technical aspects of photo production. Students can enhance their artistic and technical photography abilities via hands-on camera experience.

This study underscores the significant importance of diverse practical methods in enhancing educational experience. These instruments, encompassing microscopes, chemical apparatus, electronic gadgets, and vocational training tools, facilitate practical study across diverse disciplines. Practicum equipment enhances students' comprehension of theoretical concepts and promotes the development of essential skills through practical applications. These tools provide students with the skills and information essential to navigate real-world challenges and pursue careers more adeptly in their selected field.

**Discussion**

The findings of this study align with the ideas outlined in other prominent educational theories. These educational ideas elucidate that the utilization of diverse learning aids and practical instruments significantly enhances the student learning experience and outcomes (Irwansyah, 2021; Tazkia & Suherman, 2016). Merrill's instructional design concepts prioritize problem-solving and active engagement as essential components of effective learning (Kurt, 2022; Pappas, 2023). The utilization of globes, maps, atlases, and human skeleton models in the classroom facilitates the elucidation of essential knowledge concepts that students must comprehend. These props can promote student engagement with the studied topic, enhance visualization of intricate concepts, and assist with problem-solving. Utilizing the globe to comprehend the earth's rotation and its impact on the alternation of day and night will engage students in critical thinking about this cosmic event. Anatomical models enable students to investigate and comprehend the structure and functions of the human body through manipulation and direct observation. Manipulation and direct observation enhance students' intellectual comprehension via practical applications (Merrill & Frick, 2020; Truong et al., 2019).

Vygotsky's constructivist theory posits that learning is a social process occurring as individuals gain knowledge via interactions with their environment and peers (David, 2014; Karpov & Bransford, 1995). Teaching aids, like maps, globes, and anatomical models, serve as instruments for investigation and mutual comprehension among learners and educators in the educational setting. Utilizing interactive digital maps enables students to participate, engage in discourse, and analyze geographic data. Similarly, during mathematics and physics classes, students participate in hands-on activities that involve using anatomical models and creating environments. They will not engage with the media independently but will attempt to do so collaboratively with teachers and fellow students inside their school setting. Discussing the fascination of the props will initiate a dialogue that encourages learners to actively examine the props associated with the new knowledge the teacher presents (Alkhudiry, 2022; Pathan et al., 2018; Rahmawati & Purwaningrum, 2022; Tohari & Rahman, 2024).

Kolb's Experiential Learning Theory underscores the necessity of acquiring knowledge through practical experience since the transformation of experiences yields new insights that are more expansive and profound for learners (Datta, 2023; Morris, 2020). The use of microscopes, chemical laboratory apparatus, and vocational training tools exemplifies Klob's assertion. These practicum methods furnish students with experiential learning that underpins reflection, conceptualization, and exploration (Bertoni & Bertoni, 2019). Utilizing a microscope to examine cellular structures enables students to connect directly with biological concepts, fostering better understanding via active investigation and intentional reflection on their observations.

Vocational training that integrates electronic equipment and medical devices enables students to apply their theoretical knowledge to practical scenarios, fostering experiential learning and skill enhancement (Bertoni & Bertoni, 2019; Datta, 2023; Mercer & Mcdonagh, 2021; Morris, 2020; Pradnya et al., 2023). John Dewey's concept of experiential learning underscores the significance of applying knowledge through practical engagement (Quay et al., 2022). Participants in this study possess knowledge of the media and have actively utilized it for educational purposes. Utilizing scales for unit conversions and weight measures while employing a typewriter for office tasks provides students with the opportunity to engage in practical, real-world applications while acquiring knowledge. These exercises facilitate students' comprehension of academic subjects while equipping them for future professional responsibilities by cultivating pertinent abilities through active engagement and practical application (Drolet et al., 2023; Hasbullah, 2020; Mutrofin, 2022; Quay et al., 2022).

Gagné's instructional principles offer a methodical framework for creating a successful learning experience (Gagne, 2013; Gagne et al., 2005). This study indicates that the application of various educational technologies aligns with the instructional concepts articulated by Gagné. Utilizing globes and maps to visually explore geography and astronomy effectively captivates learners and conveys new information. These tools facilitate the provision of learning recommendations by assisting students in acquiring a more profound understanding of the subjects under examination using illustrations and visualizations. Physically engaging models and equipment during the learning process transform the educational setting into a space for experiential learning and practical application. The instructional medium facilitates enduring retention of learning activities among participants and enables them to articulate their knowledge when prompted to reflect on their learning experiences. Teaching aids and practical tools have fostered significant learning in the recollections of the study participants (Bertoni & Bertoni, 2019; Firda & Anam, 2022).

This study demonstrates that the utilization of diverse learning media and effective instructional strategies aligns with the essential educational concepts proposed in educational theories. Merrill underscores the importance of active engagement and problem-solving through the utilization of interactive and stimulating teaching resources (Truong et al., 2019). Facilitating collaborative and experimental learning aids and practicum tools reinforces Vygotsky's constructivist theory (Newman & Latifi, 2021). The teacher's immediate application during the learning process signifies the manifestation of the direct learning experience Kolb refers to real-world applications and the development of practical learning skills (Morris, 2020), like using administrative and corporate tools, demonstrating Dewey's experiential learning (Hasbullah, 2020). Gagné's instructional principles provide a comprehensive framework for effectively utilizing learning resources in an educational methodology (Gagne, 2013). Collectively, these ideas give us a full picture of how using teaching aids and practicum tools improves the learning process by making abstract ideas more concrete and encouraging a deeper, more useful understanding of the subject.

## CONCLUSION

This study emphasizes the importance of various teaching aids and practicum tools in improving educational experiences and student learning outcomes. Through the incorporation of many teaching resources, such as globes, maps, anatomical models, and digital tools, educators can successfully bridge the gap between theoretical understanding and practical implementation. These tools are based on various basic educational theories, such as Merrill's Principles of Instructional

Design, Vygotsky's Constructivist Learning Theory, Kolb's Experiential Learning Theory, Learning by Doing Dewey, and Gagne's Nine Instruction Events.

Merrill's concepts emphasize the significance of active participation and problem-solving, which are bolstered using interactive instructional tools and engaging learners. The direct and exploratory nature of this learning medium facilitates Vygotsky's constructivist approach, which prioritizes social interaction and collaborative learning. The utilization of actual knowledge through microscopes, laboratory equipment, and vocational training devices exemplifies Kolb's experiential learning theory. The real application and pragmatic competencies developed through these instructional tools are examples of Dewey's pedagogy about experiential learning. Gagne's instructional principles offer a systematic framework for incorporating functional learning resources in teaching.

The results of the overall study explain that the use of learning aids and practicum tools is crucial to making abstract ideas in the learning process concrete, promoting deep understanding, and fostering analytical reasoning and problem-solving skills. Educators can build a dynamic and efficient learning environment that accommodates a wide range of student needs by utilizing different instructional resources and ultimately improving educational outcomes.

Combining various teaching aids and practicum tools in education is not only done by established educational theories but also demonstrates pragmatic and efficient methods to improve students' learning experiences. Given the ongoing advancements in educational technology, educators must embrace and modify these tools to develop more captivating, dynamic, and significant learning experiences that equip students with the skills necessary to navigate the intricacies of the real world. The findings of this study provide useful direction for educators and policymakers in developing and implementing instructional techniques that maximize the use of learning media. Future research can compare the results of this study with the experiences of students from different cohorts as a form of longitudinal research. In addition, researchers can also compare it with the experiences of students who attend classes in the on-site classroom.

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