Journal Scientific of Mandalika (JSM)
https://www.ojs.cahayamandalika.com/index.php/jomla

Vol. 7, No. 4, 2026
e-ISSN: 2745-5955 | p-ISSN: 2809-0543
hh. 542-550

Identifying students' knowledge of multimedia technology use in secondary education learning

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Abstract: *This study presents an analysis of students' knowledge regarding multimedia technology as a subject within the teaching and learning process, particularly in the context of practical laboratory sessions. The research is entitled Identification of Students' Knowledge of Multimedia Technology Use in Secondary Education Learning. The objectives of this study are to examine the importance of multimedia technology in secondary education and to identify how multimedia technology is utilized by students in the teaching and learning process at the secondary level. The population of this study consisted of twenty (20) schools, while the sample included five (5) representative schools, involving a total of 50 students, comprising 28 male and 22 female students. This study employed a qualitative descriptive method, and the data collection techniques used were documentation and questionnaire-based surveys. The primary instrument for data collection was a structured questionnaire. The results of the study indicate that out of the 50 secondary school students from five schools, all respondents acknowledged that multimedia technology is a subject included within their learning context. Regarding familiarity with multimedia technology topics, 66% of students responded "yes," while 34% responded "no," indicating that the majority of students possess knowledge of multimedia technology. However, concerning the availability of practical laboratory sessions related to multimedia technology, only 36% of students responded "yes," while 64% responded "no," suggesting that most students still lack access to practical laboratory facilities. Furthermore, regarding the use of materials in practical sessions related to operating computer programs, only 10% of students responded "yes," while 80% responded "no." These findings indicate that only a small proportion of students understand the process of operating computer programs.*
Keywords: *Knowledge, Multimedia Technology, Secondary Education*

Abstrack: Penelitian ini menyajikan analisis mengenai pengetahuan siswa terhadap teknologi multimedia sebagai suatu mata pelajaran dalam proses pembelajaran, khususnya dalam konteks kegiatan praktikum di laboratorium. Penelitian ini berjudul Identifying Students' Knowledge of Multimedia Technology Use in Secondary Education Learning. Tujuan penelitian ini adalah untuk mengkaji pentingnya teknologi multimedia dalam pendidikan menengah serta mengidentifikasi pemanfaatan teknologi multimedia oleh siswa dalam proses pembelajaran di tingkat pendidikan menengah. Populasi penelitian ini terdiri dari dua puluh (20) sekolah, sedangkan sampel penelitian mencakup lima (5) sekolah yang representatif dengan jumlah responden sebanyak 50 siswa, yang terdiri dari 28 siswa laki-laki dan 22 siswa perempuan. Penelitian ini menggunakan metode deskriptif kualitatif, dengan teknik pengumpulan data berupa dokumentasi dan survei melalui kuesioner. Instrumen utama yang digunakan dalam pengumpulan data adalah kuesioner terstruktur. Hasil penelitian menunjukkan bahwa dari 50 siswa sekolah menengah yang berasal dari lima sekolah, seluruh responden menyatakan bahwa teknologi multimedia merupakan salah satu mata pelajaran dalam konteks pembelajaran mereka. Terkait pemahaman terhadap materi teknologi multimedia, sebanyak 66% siswa menjawab "ya", sedangkan 34% menjawab "tidak", yang menunjukkan bahwa sebagian besar siswa telah memiliki pengetahuan mengenai teknologi multimedia. Namun demikian, terkait ketersediaan kegiatan praktikum di laboratorium yang berhubungan dengan teknologi multimedia, hanya 36% siswa yang menjawab "ya", sedangkan 64% menjawab "tidak". Hal ini menunjukkan bahwa sebagian besar siswa masih belum memiliki akses terhadap fasilitas laboratorium praktik. Selain itu, terkait penggunaan materi dalam kegiatan praktikum yang berkaitan dengan pengoperasian program komputer, hanya 10% siswa yang menjawab "ya", sedangkan 80% menjawab "tidak". Temuan ini mengindikasikan bahwa sebagian kecil siswa yang memahami proses pengoperasian program komputer.
Kata Kunci: Pengetahuan, Teknologi Multimedia, Pendidikan Menengah

How to Cite: Paulo Alves Cabral, Kristiani, Pedro Correia. Identifying students' knowledge of multimedia technology use in secondary education learning. Journal Scientific of Mandalika (JSM) E-ISSN 2745-5955 | P-ISSN 2809-0543, 7(2), 265-275. https://doi.org/10.36312/10.36312/vol4iss1pp542-550

https://doi.org/10.36312/10.36312/vol4iss1pp542-550

INTRODUCTION

In the contemporary era, society is living in a technological age in which all sectors benefit from existing technological advancements that aim to improve activities and meet various needs. Multimedia technology has increasingly gained prominence and has become one of the most effective tools in supporting the teaching and learning process. As a foundational element in education, multimedia technology plays a crucial role, as all areas of society benefit from technological tools designed to enhance performance and address specific demands.

According to Akkoyunlu and Yilmaz (as cited in Klein et al., 2013, p. 3), multimedia provides a new dimension to classroom instruction, where students learn and develop through technological resources and scientific advancements. These innovations engage multiple senses simultaneously, thereby increasing students' motivation and enhancing their potential for academic success.

Almeida (as cited in Luis, 2013, p. 116) explains that in the 1990s, the first version of the National Program for Informatics in Education was introduced, aiming to prepare teachers to use computers with their students and to establish educational computing centers within State Departments of Education. These centers were responsible for teacher training and for supporting public school students in the use of computers.

Information technologies serve as essential tools that support teachers in the teaching and learning process by facilitating the delivery of knowledge in a creative and dynamic manner. They contribute to the right to education by making learning more engaging and interactive. This program emphasizes teacher and educator training through an integrated process that combines technological proficiency, educational theories, and pedagogical practices involving technology (Almeida, 2001).

Human beings possess the ability to interpret information through the five senses—vision, hearing, touch, taste, and smell. When communication engages multiple senses, the conveyed message becomes richer, thereby facilitating both transmission and comprehension. Multimedia has gained increasing relevance in the educational context, with its use as a learning tool expanding significantly. In this regard, education is undergoing new challenges and transformations in response to technological advancements (Ribeiro, 2007).

Vrakking (as cited in Luis, 2013, p. 118) highlights that a key concern lies in understanding whether technological resources influence student learning. Therefore, the effectiveness of teaching and learning processes using multimedia resources as mediating tools must be carefully considered. Technologies that were previously used separately—such as telephone, radio, television, video, and audio—are now integrated through computers and their peripherals, including video cameras, printers, internet connectivity, optical disk readers and writers, audio systems, and radio and television stations accessible via the internet.

Mainart and Santos (as cited in Gracia, 2013, p. 35) emphasize that the use of technology in the school environment is essential, as schools function as spaces for knowledge construction, socialization of learning, discussion, exchange of experiences, and the development of a new society.

Currently, public discourse often reflects various concerns regarding the use of computers and their resources in classrooms. Kenski (as cited in Gracia, 2013, p. 29) notes that expressions such as "technological society" and "technology has invaded daily life" are now common, sometimes generating apprehension among individuals who feel uneasy about the possibilities portrayed in science fiction, where technology appears to dominate human life.

Today, most schools in Timor-Leste possess at least one computer in classrooms or have access to computer laboratories, enabling students to engage in learning activities. Advances in computer hardware have led to the development of increasingly powerful systems, supporting software tools that enhance teaching and learning processes. The evolution of hardware, including features such as voice channels, CD-ROMs, video capabilities, and other components, has facilitated multimedia-based learning, combining the realism of television with the flexibility of computers, thereby significantly impacting education.

Thus, technology has become a global necessity, and educational institutions in Timor-Leste must be prepared to adapt to this reality. The process of learning to use multimedia technology involves preparation in the use of learning tools and the provision of practical explanations within laboratory settings. Over time, schools have increasingly recognized the potential of multimedia technology not only to provide access to computers but also to support knowledge acquisition and student preparation. The Ministry of Education has implemented a curriculum that includes multimedia technology as a subject for secondary school teachers. The implementation of this curriculum reform requires the development of textbooks, teacher guides, and technical training for educators. This reform, initiated in 2010 by the government of Timor-Leste through the Ministry of Education, has been applied in teaching and learning processes across schools.

The multimedia technology curriculum for Grades 10 to 12 includes topics such as computer operations, word processing, and spreadsheets in Grade 10; basic internet functions, images, audio, digital video, and multimedia integration in Grade 11; and social web, collaboration, knowledge construction, and web-based project development in Grade 12. However, observations indicate that the majority of students still lack comprehensive knowledge regarding the use of multimedia technology in their daily lives.

This study aims to examine the importance of multimedia technology in secondary education and to identify how it is utilized by students in the teaching and learning process.

Technology and Multimedia

Technology is a product of science and engineering that encompasses a set of tools, methods, and techniques designed to solve problems. The term originates from the Greek tekhne (technique, art, craft) and logia (study). According to the Dicionário da Língua Portuguesa da Porto Editora, technology refers to the set of tools, methods, and techniques that enable the practical application of scientific knowledge. Although often used interchangeably, technology should not be confused with information technology, which specifically relates to the processing and dissemination of information through artificial means, particularly computer-based systems. Technologies can be classified into high, medium, and low categories based on cost, complexity, and usability.

Technology has been increasingly integrated into the teaching and learning process as a mediating tool between individuals and knowledge, enabling diverse approaches to learning and fostering dynamic educational environments. Mastery of technological tools can support the development of cognitive skills, critical thinking, and problem-solving abilities (Stahl apud Stemmer, 2006, p. 162). Rapid technological advancement continuously produces new devices, requiring constant adaptation to newer models such as mobile phones, computers, and MP3 devices. The term "multimedia strategy" is used to describe the integration of multiple communication media, such as when a film release is accompanied by video games, television series, and related products (Lévy, 2000, p. 68).

Understanding the historical evolution of technology within socio-cultural contexts allows for a deeper appreciation of human participation in societal development and progress (Veraszto, 2004, as cited in Silva et al., 2008, p. 61). Multimedia refers to the controlled combination of at least one type of static media (text, photography, graphics) and one type of dynamic media (video, audio, animation).

According to Lévy (as cited in Costa, 2006, p. 164), multimedia comprises technologies that enable the capture, storage, processing, transmission, and presentation of information in an integrated, multisensory, and interactive manner. Passarelli (as cited in Leandro et al., 2006, p. 159) further highlights that hypermedia and multimedia environments are powerful tools for knowledge integration and contextualization, supporting the construction of learning through interactive storytelling.

Use of Multimedia Technology in Secondary Education in Timor-Leste

The multimedia technology curriculum for Grades 10 to 12 is designed to align with national educational guidelines. The use of multimedia technology as a teaching tool enhances lesson preparation and increases student engagement, motivating active participation and facilitating understanding. Multimedia should not replace teachers but rather support and enrich the educational process (Assis & Bittencourt, 2002).

Paqueva (1996) identifies four pedagogical potentials of multimedia in education:

1. Interactive learning that promotes meaningful dialogue;
2. Adaptability to different levels of student intelligence and learning needs;
3. Multiple levels of interactivity;
4. Integration with other learning resources.

Importance of Multimedia Technology in Teaching and Learning

Early computers were expensive and primarily used by scientists, the military, and large corporations. Communication between distant systems was a key requirement. According to Ribas (2008), teachers must be creative, competent, and committed to integrating new technologies, adapting to the knowledge society and redefining educational practices.

Valente et al. (as cited in Aquino, 2006, p. 165) distinguish between using ready-made multimedia and authoring systems that allow learners to create their own content. While multimedia offers various combinations of text, images, and sound, learners often remain passive by merely selecting options provided by software.

Technological integration has transformed teaching and learning methods, increasing student motivation and promoting active participation. Students are no longer passive recipients but active constructors of knowledge. However, Gatti (as cited in Mainart & Santos, 2010, p. 3) warns that technology only improves education if it enhances teaching quality; otherwise, it may simply reinforce traditional, memorization-based learning.

According to Almeida (2007), technology creates new learning environments that differ from traditional settings, and its true contribution emerges when it is used as a mediator in knowledge construction.

RESEARCH METHODOLOGY

This study initially employed a bibliographic review as a methodological foundation, followed by a descriptive and exploratory applied research design, as well as field research using a mixed-methods approach combining quantitative and qualitative techniques. Data were collected using a semi-structured questionnaire, which was distributed to students from the Science and Technology and Social Sciences and Humanities streams across five (5) secondary schools. The study was conducted in February 2020. The criteria for participant selection included enrollment as secondary school students and willingness to participate in the study.

The participants selected for this study consisted of students enrolled in Science and Technology and Social Sciences and Humanities programs at the secondary education level. The sample comprised 50 students, as presented in Tables 1–5 below. The selection of participants was conducted randomly and was not based on age, gender, or other demographic characteristics. The only requirement was that participants were students from public or private secondary schools.

The data collection instrument consisted of a structured questionnaire designed for students. The questionnaire included 20 items covering four main dimensions: general knowledge, material resources, use of material resources, and program operation.

Participation in the study was voluntary, and anonymity was assured by the researcher.

Table 1. Research Sample from Catholic Secondary School Sagrada Coração de Jesus Becora

Grade	Class (CT)	Class (CS)	Male (M)	Female (F)
10th Grade	2	1	1	1
11th Grade	1	2	1	3
12th Grade	2	2	2	2
Total	5	5	4	6
Overall Total	10	10		

Table 2. Research Sample from General Secondary School Nobel Da Paz Quintal Boot

Grade	Class (CT)	Class (CSH)	Male (M)	Female (F)
10th Grade	1	2	2	1
11th Grade	2	1	1	1
12th Grade	2	2	2	3
Total	5	5	5	5
Overall Total	10	10		

Table 3. Research Sample from General Secondary School 12 de Novembro Becora

Grade	Class (CT)	Class (CSH)	Male (M)	Female (F)
10th Grade	2	1	1	2
11th Grade	2	1	2	1
12th Grade	2	2	2	2
Total	6	4	5	5
Overall Total	10	10		

Table 4. Research Sample from Secondary School Colegio São Jose Operaria Balide

Grade	Class (CT)	Class (CSH)	Male (M)	Female (F)
10th Grade	1	2	2	1
11th Grade	2	2	2	2
12th Grade	2	1	1	2
Total	5	5	5	5
Overall Total	10	10		

Table 5. Research Sample from Secondary School 5 de Maio Becora

Grade	Class (CT)	Class (CSH)	Male (M)	Female (F)
10th Grade	2	2	2	2
11th Grade	2	2	2	2
12th Grade	1	1	1	1
Total	5	5	5	5
Overall Total	10	10		

RESULTS AND DISCUSSION

Table 6. Matrix of the questionnaire administered to Grade 10 to Grade 12 students in Science and Technology (CT) and Social Sciences and Humanities (CSH) streams at General Secondary Schools.

Objective	Questionnaire	
	Questionnaire Number	Student Response Codes
Identification of Students' Knowledge of Multimedia Technology Use in Teaching and Learning	Q1 to Q11	A1 to A50
	Q2 to Q12	A1 to A50
	Q3 to Q13	A1 to A50
	Q4 to Q14	A1 to A50
	Q5 to Q15	A1 to A50
	Q6 to Q16	A1 to A50
	Q7 to Q17	A1 to A50
	Q8 to Q18	A1 to A50
	Q9 to Q19	A1 to A50
	Q10 to Q20	A1 to A50

Table 6 aims to identify students' knowledge regarding the use of multimedia technology. Codes A1 to A50 represent the students' responses.

Students' Basic Knowledge of Multimedia Technology Definition

Table 7. Multimedia is a term derived from the English language, referring to the use of multiple media simultaneously in the transmission of information.

Response Level	Student Frequency	Percentage (%)
Yes	47	94%
No	3	6%
Total	50	100%

Based on the data presented in Table 7, 94% of students selected the "yes" option, indicating that the majority understand multimedia as the use of multiple media simultaneously in information transmission. In contrast, 6% of students selected "no."

1. Students' Basic Knowledge of the Internet

Table 8. The Internet is a communication network that provides access to a wide range of services.

Response Level	Student Frequency	Percentage (%)
Yes	46	92%
No	4	8%
Total	50	100%

Regarding responses to the statement that the Internet is a communication network offering a wide range of services, 92% of students responded "yes," indicating that they recognize the Internet as a tool that supports various services. Meanwhile, 8% of students responded "no." One student who selected "no" justified the response by stating that they still lack sufficient knowledge about the Internet.

2. Students' Basic Knowledge of Internet-Related Resources

Table 9. Availability of material resources such as computers in schools.

Response Level	Student Frequency	Percentage (%)
Yes	38	76%
No	12	24%
Total	50	100%

Based on the data presented in Table 9, 76% of students responded "yes," indicating that computers are available in their schools. However, one student justified that they do not fully understand computers because their school does not provide access to them. Meanwhile, 24% of students responded "no."

3. Students' Basic Knowledge of Computer Facilities

Table 10. Availability of multimedia technology laboratories in schools.

Response Level	Student Frequency	Percentage (%)
Yes	39	78%
No	11	22%
Total	50	100%

Based on Table 10, 78% of students responded "yes," indicating that their schools have multimedia technology laboratories, often referring to computer labs. In contrast, 22% of students selected "no." One student justified this response by stating that they had never participated in practical sessions in a computer laboratory.

4. Students' Basic Knowledge of Resource Utilization

Table 11. Preference for using computers.

Response Level	Student Frequency	Percentage (%)
Yes	35	70%
No	15	30%
Total	50	100%

Regarding students' preference for using computers, 70% responded "yes," explaining that computers help them complete academic tasks. Meanwhile, 30% responded "no." One student justified this response by stating that they do not have the opportunity to learn how to use computers at school or at home because they must assist their parents with household responsibilities, leaving them with limited time to learn.

5. Students' Basic Knowledge of Program/Application Location on Computers

Table 12. Attendance in multimedia technology classes based on the student manual.

Response Level	Student Frequency	Percentage (%)
Yes	34	68%
No	16	32%
Total	50	100%

Based on the data in Table 12, 68% of students responded "yes," indicating that they attended classes based on the multimedia technology student manual. These students expressed that the learning environment was conducive to studying and learning. Meanwhile, 32% responded "no." One student justified this response by stating that the school environment was not safe or supportive for learning. Based on students' responses related to internal factors, including psychological aspects and personality, personality appears to have a stronger influence on students' performance in the teaching and learning process.

Material Resources

1. Information on the Availability of Multimedia Technology Laboratories in Schools

Table 13. Use of computers in the teaching and learning process.

Response Level	Student Frequency	Percentage (%)
Yes	10	20%
No	40	80%
Total	50	100%

Based on Table 13, only 20% of students reported using computers in the teaching and learning process, while 80% responded "no." One student justified this by stating that computer facilities in their school are limited. Another student explained that computer use is restricted to higher-grade students (Grade 12) during practical sessions in the computer laboratory.

2. Material Resources: Computers in Schools

Table 14. Understanding of computer functions (input, processing, storage, and output).

Response Level	Student Frequency	Percentage (%)
Yes	36	72%
No	14	28%
Total	50	100%

Regarding the understanding of computer functions—input, processing, storage, and output—72% of students responded "yes," while 28% responded "no." One student justified their lack of understanding by explaining that their school has limited practical activities in the computer laboratory due to insufficient computer resources for both students and teachers.

3. Students' Knowledge of Program Location on Computers

Table 15. All programs on a computer are located on the monitor.

Response Level	Student Frequency	Percentage (%)
Yes	18	36%
No	32	64%
Total	50	100%

Regarding the statement that all programs on a computer are located on the monitor, 36% of students responded "yes," while 64% responded "no." One student justified their response by stating that their school does not have a computer laboratory for practical activities and that they have never had the opportunity to learn.

Use of Material Resources

Activities in the teaching and learning process related to the use of multimedia technology resources.

Table 16. Ability to operate computer programs.

Response Level	Student Frequency	Percentage (%)
Yes	24	48%
No	26	52%
Total	50	100%

Based on the data in Table 16, 48% of students responded "yes," indicating that they are able to operate certain computer programs. These students noted that adequate equipment is available to support practical activities in computer laboratories. Meanwhile, 52% responded "no." One student justified this response by stating that their school does not have a computer laboratory for learning. Another student explained that they do not understand computer programs because they do not use computers in their daily lives.

Program Operation

1. Students' Knowledge of Computer Operation Processes

Table 17. Ability to use Microsoft Office Word to type documents.

Response Level	Student Frequency	Percentage (%)
Yes	14	28%
No	36	72%
Total	50	100%

Based on the data, 28% of students responded "yes," indicating that they are able to operate Microsoft Office Word. These students mentioned that they have scheduled time to practice in the computer laboratory. However, 72% responded "no." One student reported that, in reality, their school does not yet have a structured schedule for students to access the computer laboratory for learning.

Table 18. Ability to use Microsoft Office PowerPoint.

Response Level	Student Frequency	Percentage (%)
Yes	8	16%
No	42	84%
Total	50	100%

Only 16% of students responded "yes," indicating basic ability to use Microsoft Office PowerPoint, supported by access to computer labs. In contrast, 84% responded "no." One student justified this by stating that their school lacks computer laboratory facilities, while another indicated a lack of understanding of computer programs.

Table 19. Ability to use Microsoft Office Excel.

Response Level	Student Frequency	Percentage (%)
Yes	3	6%
No	47	94%
Total	50	100%

Only 6% of students reported being able to use Microsoft Office Excel, while 94% responded "no." This indicates that the majority of students do not understand multimedia technology content, partly due to limited practical laboratory use. One student stated that they do not fully understand how to operate Microsoft Office Excel.

Table 20. Misconception regarding the function of Microsoft Office Word (animation).

Response Level	Student Frequency	Percentage (%)
Yes	5	10%
No	45	90%
Total	50	100%

Only 10% of students responded "yes," indicating misconceptions about the function of Microsoft Office Word. Meanwhile, 90% responded "no." One student explained that they had never used a computer to complete assignments or create animations due to the lack of laboratory facilities, although they expressed a desire to learn.

Table 21. Misconception regarding the function of Microsoft Office PowerPoint (data analysis).

Response Level	Student Frequency	Percentage (%)
Yes	13	26%
No	37	74%
Total	50	100%

Only 26% of students responded "yes," while 74% responded "no." This indicates that most students lack practical experience in using Microsoft Office PowerPoint within both laboratory settings and classroom learning.

Table 22. Misconception regarding the function of Microsoft Office Excel (text editing).

Response Level	Student Frequency	Percentage (%)
Yes	10	20%
No	40	80%
Total	50	100%

A total of 20% of students responded "yes," while 80% responded "no." This suggests that most students do not fully understand multimedia technology materials due to the lack of practical experience. One student stated that computers are difficult to use because they have not had sufficient practice and suggested that teachers should develop more effective learning strategies.

Table 23. Knowledge of document storage location (Drive D).

Response Level	Student Frequency	Percentage (%)
Yes	37	74%
No	13	26%
Total	50	100%

A total of 74% of students responded "yes," indicating familiarity with document storage locations. Some students noted that while multimedia technology content can be difficult, consistent effort makes it easier to understand. Meanwhile, 26% responded "no." These findings suggest that understanding depends on students' learning efforts.

Table 24. Ability to save documents.

Response Level	Student Frequency	Percentage (%)
Yes	20	40%
No	30	60%
Total	50	100%

Only 40% of students reported being able to save documents, while 60% were unable to do so. This indicates that the majority of students do not fully understand computer program operations. One student explained that their school lacks a multimedia laboratory for practical activities.

Table 25. Ability to open saved documents.

Response Level	Student Frequency	Percentage (%)
Yes	20	40%
No	30	60%
Total	50	100%

Similarly, 40% of students were able to open saved documents, while 60% were not. One student justified their response by stating that their school does not provide computers for learning or practice.

Table 26. Understanding of USB as a storage device.

Response Level	Student Frequency	Percentage (%)
Yes	18	36%
No	32	64%
Total	50	100%

A total of 36% of students responded "yes," while 64% responded "no." Students indicated that limited access to computers in schools affects their understanding. One student noted that although computers are available, they are insufficient for all students, even though computers are considered very important for learning.

SUMMARY OF DISCUSSION RESULTS

The discussion results are presented as follows:

a) At Colégio São José Operário Balide, in terms of students' knowledge of multimedia technology, eight students (80%) responded "yes," while two students (20%) responded "no," indicating that the majority of students possess knowledge of multimedia technology. Regarding the availability of practical laboratory sessions, three students (30%) responded "yes," whereas seven students (70%) responded "no," indicating that most students still lack access to laboratory practice due to the absence of adequate facilities. Furthermore, concerning the materials used in practical laboratory sessions, only one student (10%) responded "yes," while nine students (90%) responded "no," indicating that the majority of students do not yet understand how to operate computer programs.

b) At Escola Secundária Geral 12 de Novembro Becora, seven students (70%) responded "yes," while three students (30%) responded "no," indicating that most students have knowledge of multimedia technology. Regarding the availability of laboratory practice, four students (40%) responded "yes," while six students (60%) responded "no," suggesting that the majority still lack access to laboratory facilities. In terms of the use of materials during practical sessions, two students (20%) responded "yes," while eight students (80%) responded "no," indicating that most students do not yet understand how to operate computer programs.

c) At Escola Secundária Geral 5 de Maio Becora, five students (50%) responded "yes," while five students (50%) responded "no," indicating that only half of the students have knowledge of multimedia technology. Regarding laboratory practice, four students (40%) responded "yes," while six students (60%) responded "no," showing that most students lack access to practical laboratory sessions. Concerning the use of materials in practical activities, two students (20%) responded "yes," while eight students (80%) responded "no," indicating that the majority of students do not understand program operation.

d) At Escola Secundária Nobel da Paz Quintal-Boot, four students (40%) responded "yes," while six students (60%) responded "no," indicating that most students do not have sufficient knowledge of multimedia technology. Regarding laboratory practice, three students (30%) responded "yes," while seven students (70%) responded "no," indicating limited access to laboratory facilities. In terms of materials used during practical sessions, only one student (10%) responded "yes," while nine students (90%) responded "no," indicating that most students do not understand practical computer program operations.

e) At Escola Secundária Sagrada Coração de Jesus Becora, nine students (90%) responded "yes," while one student (10%) responded "no," indicating that the majority of students have knowledge of multimedia technology. However, regarding laboratory practice, four students (40%) responded "yes," while six students (60%) responded "no," indicating that most students still lack access to laboratory facilities. In terms of materials used in practical sessions, four students (40%) responded "yes," while six students (60%) responded "no," suggesting that the majority of students do not yet understand how to operate computer programs.

CONCLUSION

Based on the data presented above, it can be concluded that the fifty (50) secondary school students from five schools indicate that multimedia technology is a subject included within their academic curriculum. Regarding topics related to multimedia technology, 66% of students responded "yes," while 34% responded "no." These findings indicate that the majority of students possess a basic understanding of multimedia technology.

However, with respect to the availability of practical laboratory sessions related to multimedia technology, only 36% of students responded "yes," whereas 64% responded "no." This result suggests that the majority of students still do not have access to practical laboratory facilities for multimedia technology learning.

Furthermore, concerning the materials used in practical classes for operating computer programs, only 10% of students responded "yes," while 80% responded "no." This indicates that most students do not yet understand the processes involved in operating computer programs.

These findings imply that the teaching methods currently employed in the learning process are not yet adequately implemented within schools, which may hinder students in the Ciência Tecnologia (CT) and Ciência Sociais Humanitárias (CSH) streams from effectively acquiring competencies in multimedia technology.

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