

## **THE CHARACTERIZATION OF ENGLISH VIRTUAL LABORATORY: A STRAUSSIAN GROUNDED THEORY APPROACH**

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#### **Abstract**

English learning process requires multi-functional facilities and infrastructure to enhance student's competency. One of them is the English Language Laboratory, where nowadays the Lab is an interactive space used both based on offline and online situation. The purpose of this study is to investigate the characteristics of the English Virtual Laboratory Component. This study used Grounded Theory method with a Straussian approach. The setting is at Language Learning Center of Sebelas Maret University. This research used Theoretical Sampling on 5 lecturers, 2 structural, 1 IT staff, and 12 students. The results of this study obtained 5 theories about the characteristics of virtual English Laboratory components, namely Internet-based Hardware and Software Devices, Online Interactive Learning Media, Skill Enhancement Media, Semi-Autonomous Units, and Ubiquiti Devices. The results of this study are useful for providing an alternative English language lab format for the world of education during online learning. Learning in the English Language Online Lab makes it easy for users to hold lessons with unlimited time.

**Index Terms:** English, Laboratory, Virtual, Grounded Theory

#### **Introduction**

Good quality education is related to the needs of strategic constituents of policy makers, parents, school management committees, teachers, students, and others (Cheong Cheng & Ming Tam, 1997:23). From the ideas and goals of education listed above, a good education must be able to accommodate the interests of social life and changing times. Good English learning requires multi-functional facilities and infrastructure, one of which is the English Language Laboratory. The Language Laboratory is a space used to communicate, learn, exchange information and develop technology (Rao, 2019), (Mohammed, 2017). The Language Laboratory has a function to significantly improve students' English competence and skills. So that the role of the Language Lab in learning can affect the learning competence of students. Facilities and infrastructure conditions on campus contribute to student learning outcomes (Latuny et al., 2021), (Setiawan et al., 2020), (Aziz et al., 2019).

Data from English First in 2020 shows that the proficiency of Indonesian students is at rank 74<sup>th</sup> compared to 100 other Asian countries and around (Education First, 2020). It proves that English Language Education in Indonesia is having problems in terms of input, process, technical, facilities and strategies applied. Learning English is basically closely related to practical activities, which are mostly carried out in the English Language Laboratory (Joshi & Shah, 2020). A good laboratory is very much supported by the sophistication of technology in it. However, the facts that exist in the laboratory today are far from expectations and experience inequality in many ways. Teachers are still more focused on lectures than using technology, there is no readiness, lack of time management and no motivation in using the Language Laboratory (Gulay Bozkurt, 2017) (Akhdiyati, 2018). Johnson and Jacovina (2016) in their research state that if schools do not have adequate computers, fast internet connections, and technology, education will become inadequate. Inequality in the education system and technology in the condition of the English Language Laboratory must be addressed immediately in order to achieve optimal learning objectives. The extraordinary flexibility of modern learning allows for learning activities that can be carried out anywhere with any device, so that this situation will give rise to the foundation of a creative society (Cathelat, 2019). Teachers must be able to empower technology in teaching and learning (Chigona & Chigona, 2019). Teachers must know which technology is suitable for the conditions in the place and how to solve problems that arise together with the campus and local government.

Nowdays the format or characteristics of the English Language Laboratory has changed into online or virtual format. It is related with the 5.0 Education Era and must be able to respond to volatility, uncertainty, complexity, ambiguity (VUCA). In this study, researchers investigated the characteristics and roles of the English Language Laboratory at the Language Center of Sebelas Maret University (UNS). The research chose the English Language Lab at UNS because the lab has online lab facilities and high technology. So it really meets the criteria for conducting research with this grounded theory approach. The conditions and processes in the English language laboratory activities based on education 5.0 are important findings for researchers and the world of education. This research finds and produces a Grand Theory of English Laboratory Design based on understanding, ideas, concepts, experiences, perceptions, perspectives, and knowledge in the learning interactions that occur. So the focus of this research is to formulate conceptual theory and design characteristics of the English laboratory in English lectures at UPT P3B UNS.

## **Literature Review**

### **English Learning Process**

English for academic purposes English for Academic Purposes, hereinafter referred to as EAP, is a branch of learning English for specific purposes English for Specific Purposes (ESP). EAP is defined as learning English specifically to facilitate academics and research (Flowerdew & Peacock, 2001, p. 8; Hyland & Hamp-Lyons, 2001). The aim of this EAP course is to acquaint students with academic reading and technical vocabulary. EAP students contain authentic academic-specific texts, for example, technology topics can be a theme to provide EAP

students with rich and authentic knowledge in learning English (Dashtestani, 2019). EAP differs from ESP in academic focus and context. EAP is a sub-discipline within ESP. EAP educators can intervene into learning progress and play an important role in mastering EAP skills. The EAP course process begins with analyzing student needs and deciding what to teach based on these needs (Klimova, Designing an EAP Course, 2015 ). The stages of EAP lectures are carried out in a coherent and learning sequence, namely, giving assignments and determining appropriate teaching methods, minimizing students' obstacles and difficulties in mastering Second Language from EAP. The following is the EAP design model (Chaudron et al., 2005):

- 1) Conduct needs analysis and set course objectives;
- 2) create a syllabus design;
- 3) Develop course materials and assignments;
- 4) Delivering courses;
- 5) Determine the method of assessment; and
- 6) Conduct course evaluation.

Teaching English for academic purposes (EAP) to students is very important for students, because if students do not master academic English it will be a barrier in improving their ability to learn in their field of work. So mastering English can prepare students to meet the demands of their future. Good EAP learning will be supported by the existence of online classes and laboratories that are currently incorporated in the virtual world, then using a pedagogy that is tailored to their interests can support success in mastering English. The EAP program plays an important role in providing the necessary English language skills as students transition from secondary education to higher education and in providing systematic second language teaching (Kohnke & Jarvis, 2021). EAP teachers are also required to be able to align with technological advances. Technology in EAP classes can be provided in the form of exercises and practices ranging from specific skills from reading and writing to interacting with screen sharing, images and artifacts. Teachers optimize the use of technology to facilitate and enhance linguistic acquisition.

### **Technological Pedagogical Content Knowledge**

Teaching English is also influenced with Technology or called TPACK. Technological Pedagogical Content Knowledge, abbreviated as TPACK, is the knowledge needed to utilize and integrate technology in learning and teaching. TPACK is a development of Pedagogical Content Knowledge (PCK) which was created by Shulman in 1987. Pedagogical knowledge includes knowledge of subjects, materials, and lessons, and teaching (Shulman, 1986). Effective teaching depends on access to knowledge, organized, knowledge of student ways of thinking and learning; knowledge of the subject matter; and knowledge of technology (Koehler et al., 2013).

TPACK is about how teachers understand technology education to create effective teaching based on technology. There are three main components in teacher knowledge, namely: content, pedagogy, and technology (Koehler et al., 2013). Content knowledge (CK) is the teacher's knowledge about the subject matter to be studied or taught. Technology Knowledge (TK) is the development of technology-based knowledge. Knowledge of technology is used to process information, communicate, solve problems, apply sophistication to learning (Mutiani et al., 2021). Theoretically, TPACK is the knowledge needed to integrate technology in learning.

### **English Laboratory**

The laboratory has undergone various developments starting from the era of the phonograph record to the modern era. It is stated in the background of the problem, that to improve language skills, schools need to pay attention to the condition of their Language Laboratory. The Language Laboratory is an electronic device designed to make the language learning process easier (Adamu et al., 2018). The word 'Language laboratory' was first used in 1930 in a research article by Ralph H. Waltz of Ohio University, USA. The use of Laboratory languages experienced rapid progress in England in the 1960s. One of the functions of the Language Laboratory was to provide an experience for students to hear spoken language and to practice speaking the language with correct intonation, pronunciation, accent and fluency. Learning in the laboratory also includes word games, quizzes, short dialogues, debates, plays, etc. (Mercy M. , 2016:34).

More technically, the language laboratory plays an important role in improving the phonetic aspects of the language itself, such as pronunciation, accent, stress, and others (Vishalakshi, 2014:87). This function is what makes the language laboratory used to equip students to get maximum competence in the target language by adding these language skills. The laboratory can function not only to record voices but also to record language activities carried out by students. In a study conducted by Hmoud (2014: 233), it was explained that the Lab can provide access to native speakers to improve students' abilities and learning properly. The history of the language laboratory can be divided into five periods:

1. The period of the phonograph record, phonetics laboratory, sixteen sets of headphones linked to a single output, before 1915,
2. Radio exploited for educational purposes and speech spectrograph were established until 1958,
3. The period of telephone and audio-material tools such as audiotapes and portable recorders and the development of the Lab until the late 1960s,
4. The period of television and computers emerged as the glamorous educational media until the late 1970s, and
5. The Digital and Online Period that lasted from the 1980s to the present day.

Furthermore, in the Digital Era through a special program, the Language Laboratory 5.0 allows teachers to create their own exercises that suit individual class needs, add multimedia, and customize content (Patil, 2009:21). Computers also allow students to participate in

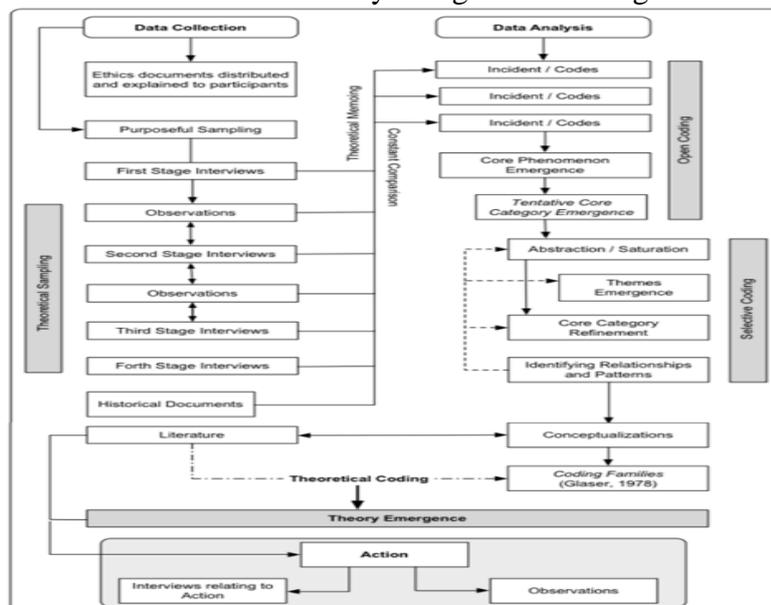
networks/onlines at national and international forums and networks. Students can also exchange ideas and information with other students and better monitor on their own accord. The current laboratory must allow "real time" conversations with individual students or groups of students, with a variety of potential feedback mechanisms for students, lecturers, or other students. Laboratory 5.0 also performs the same functions as language laboratories in the past, such as allowing students to record their voices and allowing Teachers to control student competencies.

## Research Method

This study used grounded theory to investigate the characteristics of English Virtual Laboratory Component. Grounded theory involves the “discovery of theory from data systematically obtained from social research” (Glaser & Strauss, 1967, p. 2). The goal of grounded theory is to generate a theory “that accounts for a pattern of behavior which is relevant... to those involved” (Glaser, 1978, p. 93). Grounded theory results “are not proven; they are theory” (Glaser, 1992, p. 87). In accordance with this method, the researchers began by identifying a language laboratory, teaching process and the components used.

## Procedure

Researchers explored and analyzed the data found in activities that occur in the English Language Online Laboratory at UPT P3B UNS. Next, the researcher induced the results from the data, documentation, observations, and findings in the field. From the results of the analysis, the researcher produced or found a theory that is in accordance with the data that has been analyzed through several stages using coding. In accordance with the grounded-theory methodology, the researcher collected data by doing the following:



1. Selecting a sample using the Theoretical Purposive Sampling method at the University of Sebelas Maret University, until finally finding the UPT Language

Center in which there are five English language teachers who actively use the English Language Lab and have more than 5 years of experience. The next sampling is an IT expert who is also a laboratory assistant at the UPT Language UNS language lab, 2 Management and 12 active students.

2. Performing coding analysis.
3. Analyzing the data and encouraging the process of generating categories and theories, with the hope that the new theory will emerge as a Recommendation for Conceptual Theory of the English Language Laboratory based on Education 5.0 in EAP lectures.

### **Participants**

The sample of this study used purposive theoretical sampling. Sampling in this study are informants or experts who understand the theory or conditions regarding the Conceptual Design of the English Language Laboratory. Sampling in this study were five English teaching lecturers, IT staff, Management and students at the UPT Language Center UNS. The number of samples in this study were five active English teachers who had been teaching English for more than 5 years using the English Language Laboratory, 1 Technician or IT Personnel, 2 Management, and 12 active students who participated in activities in the English Language Online Lab.

### **Results And Discussion**

#### **Results**

To collect data on the components and characteristics of the Language Online Lab, the researchers used theories and indicators from ASC Direct 2018. Based on these indicators, the researchers then reviewed and explored information through interviews, the indicators are as follows:

1. Acoustics
2. Privacy
3. Attention
4. Individualization
5. Developing English Competence Skills
6. Efficiency
7. Variety
8. Oral Testing
9. Teacher Monitoring
10. Role Playing

11. Exercise
12. Shortcomings
13. Furniture/Form
14. Computer System
15. Technology
16. Additional Equipment

The online English laboratory used in online learning by teachers and students is very different from the physical/offline laboratories on campus in general. The interview below will reveal what components are contained in the Online Laboratory in online EAP learning. In the first session the researchers discussed equipment related to hardware and software used in the English Online Lab. The following is an excerpt from the interview with the informant:

#### Interview Transcript

P1 If I use a headset so that outside sounds don't come in and the sound can be heard clearly. Minimal destruction. Then for the lighting I use the background feature. There are none for students. They are free to use a laptop or cellphone. I did not specify.

P2 The tools used, starting from the beginning of the video using PPT or Canva. Video editing with cellphones and laptops with applications. Video capture with a cellphone camera, audio also with a cellphone or with a laptop. headsets.

P3 For students, they are free but I emphasize to use a laptop. But there are some who have problems with laptops so they use HP.

P4 Laptop is easier to operate. Others are software, audio video on a laptop or software.

P5 Hardware, laptop, headset, cellphone, Zoom, gform, quizzes, gmeet.

M1 Computer,Headset

M2 Some dictionary books and computer

M3 English dictionary, English videos

M4 Tools that facilitate language learning in the form of projectors, dictionaries, computers, and loudspeakers.

M5 Computer

M6 Computer, audio device, headset, speaker, whiteboard, projector lcd

M7 Computer and auxiliary devices, LCD, table and chairs, air conditioner.

M9 Computer, Student Panel, Audio Device, Teacher Panel, Headset, Speaker etc.

M10 Highly representative classrooms, auditorium, SAC and multimedia equipment.

M11 Computer, LCD, whiteboard, desk, chair

M12 Desk, chair, computer, LCD, whiteboard

(Interview 7 September 2021)

Based on the interview above, the online English laboratory uses two types of equipment in the learning process, namely Hardware and Software. Hardware-related equipment is a crude device such as a laptop or computer set, audio, mic, lighting, and place settings. The next tool is software or software, for example, applications for online meetings (Zoom Meeting, Google Form, Ms. Teams, Edmodo and Online Edu Games), Canva, PPT, and YouTube.

### **Open Coding**

In open coding, researchers form categories of information by segmenting information. In each category, the researcher finds several sub-categories, then searches for data to maximize the range of these subcategories. When a set of categories has been developed, the researcher then identifies a single category from the open coding list as the central phenomenon. This category is a category that is widely discussed by the respondents. The results of the formulation of the first problem are about what tools are used, how they form, and how the character of the online language lab is.

The research questions posed to the respondents were directed at understanding the processes, components and characteristics of the online language lab. This stage begins with exploring the problem, the researcher then turns to the respondents by asking more detailed questions that will help form the axial coding stage. The goal is to gather as much information as possible in order to fully develop or saturate the model.

No	Gambar	Coding
1		<ul style="list-style-type: none"> <li>a. Online Lab Equipment In The Form Of Laptops,</li> <li>b. Mobile Phone,</li> <li>c. Audio Sets,</li> <li>d. Software,</li> <li>e. Application,</li> <li>f. Internet Connection,</li> <li>g. Information</li> </ul>
2		<ul style="list-style-type: none"> <li>h. Online Lab Equipment At UPT P3B. Computer Set And Internet Network.</li> <li>i. Table</li> <li>j. Chair</li> <li>k. Electricity</li> </ul>
1		<ul style="list-style-type: none"> <li>l. Students Operate Themselves.</li> <li>m. Independent</li> <li>n. One Device Per Student</li> <li>o. Separate Learning</li> <li>p. Students Focus On Their Own Devices</li> </ul>
2		

**Open and Axial Coding Analysis from the interview topic**

<b>Hardware Equipment</b>	19. Lab can control participants' attitude
1. Laptops	20. Lab can be a means of increasing value
2. Mobile	21. Lab can assess attitude
3. Computer	22. Lab can be used to assess activity
4. Headset	23. Lab can assess cognitive
5. Mic	24. Lab ensures students stay focused
6. Lighting	25. Lab provides evidence of participant attendance
7. Webcam	26. Labs make students always ready
<b>Applications and Software</b>	27. The lab increases participants' awareness
1. Microsoft	28. The online lab functions as supervisor and monitoring
2. Zoom Meeting	29. Online Lab can be used anywhere
3. Google Forms	30. Online Labs are less effective in monitoring
4. PPT	31. Online Lab is more convenient than offline
5. Canva	32. Online Lab is more private than offline
6. Youtube	33. Online Lab limits learning methods
7. Quizes	34. Online labs increase teacher innovation
8. Google Classroom	35. Online Lab increases student activity
<b>Language Online Lab Characters</b>	36. Lab as a means of achieving learning targets
1. Full student attention	37. Laptop PCs are better for learning
2. participants are more concentrated	38. Lab online is more efficient
3. Greeting to attract attention	39. Students must always be ready
4. Regulations support attention in the lab	40. Students are easy to follow
5. Rule of time to attract attention	41. Students are comfortable using the online lab
6. Onecam feature to monitor Attention	42. Students are disrupted by the network
7. Access to the campus Online Lab can be used freely	43. The application problem is not updating
8. Routine maintenance of the online lab at the campus is required	44. The problem of student laptops lacking updates
9. Internet Support Online Lab	45. Minimal Distraction
10. The campus subscribes to the official software	46. Graduation scores are not only influenced by online Labs
11. Class activity is affected by class character	47. Teachers can open classes anywhere
12. Freedom in the use of tools and media	48. Teachers are required to be creative
13. Freedom to seek information	49. Teachers must often recall
14. Dependence on the internet network	50. Teachers give freedom to seek information
15. Internet Signal Dependence	51. The teacher makes a video before the lecture
16. The quality of the tool is good	52. The teacher prepares a strategy for activities in the lab
17. Quotas are a problem	53. Student equipment is not good
18. Lab functions as a discussion medium	

Open Coding	Axial Coding
Laptops Mobile Computer Headset Mic Lighting Webcam	Hardware Equipment in English Online Lab
Microsoft Zoom Meeting Google Form PPT Canva Youtube Quizzes Google Classroom	Applications and Software in the Online English Lab
Full student attention Good tools make participants more concentrated Greeting to attract attention Regulations support attention in the lab Rule of time to attract attention Oncam feature to monitor Attention Lab ensures students stay focused	Online Lab Language attracts the attention of participants
Campus Online Lab Access can be used freely Freedom in the use of tools and media Freedom to seek information Online Lab can be used anywhere Teachers can open classes anywhere Teachers give freedom to seek information Participants are free to choose tools Participants can operate themselves Participants are given the opportunity to participate	Online Lab gives freedom to users
Online Lab is more convenient than offline Online labs increase teacher innovation More efficient online lab Students easy to follow Students are comfortable using the online lab Teachers can open classes anywhere Participants can operate themselves No special tools	Online lab as an effective medium in learning
Online Lab Support Internet Dependence on the internet network Internet Signal Dependence Quota is a problem	Internet and Technology as the main support for online English Lab
A good tool makes participants more concentrated Online lab routine maintenance is required at the campus Campus official software subscription Tool quality is good Laptop PC is better for learning Minimal Distraction No problems from the teacher	A good Online Lab needs maintenance
Full student attention Campus Online Lab Access can be used freely Class activity is affected by class character Freedom to seek information Lab functions as a discussion medium	Online Lab makes it easy to interact and discuss

<p>Lab can be used to assess activity Labs make students always ready Lab increases participant awareness Online Lab increases student activity Students are comfortable using the online lab Teachers give freedom to seek information The teacher prepares a strategy for activities in the lab Participants are given the opportunity to participate</p>	
<p>Lab can control participant's attitude Lab can be a means of increasing value Lab is able to assess attitude Lab can be used to assess activity Lab can assess cognitive Labs make students always ready Lab increases participant awareness Graduation scores are not only influenced by online Labs Teachers are required to be creative</p>	<p>Online English Lab can improve students' soft skills, attitudes and cognitive</p>
<p>Freedom to seek information Teachers give freedom to seek information Videos from teachers to build information</p>	<p>Lab as a means of building information</p>
<p>Online Lab Support Internet Dependence on the internet network Internet Signal Dependence Quota is a problem Online Lab is less effective in supervision Online Lab limits learning methods Network disrupted student Participants have limited access</p>	<p>Internet is an obstacle in the Online Lab</p>
<p>Tool quality is good Online Lab can be used anywhere Online Lab is more convenient than offline Online Lab is more private than offline Laptop PC is better for learning Leb online is more efficient Minimal Distraction Participants are free to choose tools Outside sound is not coming in No special tools</p>	<p>Technology in the Lab makes the learning process easier</p>
<p>A good tool makes participants more concentrated Oncam feature to monitor Attention Lab can be a means of increasing value Lab can be used to assess activity Lab can assess cognitive Lab provides evidence of participant attendance The online lab functions as a supervisor and monitoring</p>	<p>Lab as a means of class assessment and monitoring</p>
<p>Online Lab increases student activity Lab as a means of achieving learning targets The teacher makes a video before the lecture The teacher prepares a strategy for activities in the lab</p>	<p>Lab helps in media and learning process</p>

### Axial Coding of English Online Lab Component

After doing open coding, the researcher then did axial coding, namely mapping the main ideas. In the axial coding process, the researcher reviews the data to provide knowledge about the coding of specific categories that relate to or explain the central phenomenon. Information from

the axial coding stage is then organized into a chart that displays a theoretical model of the components of the Online English language laboratory. In the figure, the researcher presents a coding paradigm or visual model, where the researcher identifies the central category of the Online Language Lab component, explores the categories of conditions that affect the Online Language Lab component, determines the actions or interactions that result from the central category, identifies the context, and describes the results of the action or interaction of the English Online Lab component.

In axial coding, researchers got 15 codes or components in the Online English laboratory. These components are:

1. Hardware Equipment in the Online English Lab
2. Applications and Software in the Online English Lab
3. Language Online Lab attracts participants' attention
4. Online Lab gives freedom to users
5. Online lab as an effective medium in learning
6. Internet and Technology as the main support for online English Lab
7. A good online lab needs maintenance
8. Online Lab makes it easier to interact and discuss
9. Online English Lab can improve students' soft skills, attitudes and cognitive
10. Lab as a means of building information
11. Internet is an obstacle in Online Lab
12. Technology in the Lab simplifies the learning process
13. Lab as a means of class assessment and monitoring
14. Lab helps in media and learning process
15. The Technological Gap is a limiting factor in online labs

### **Selective Coding of English Online Lab Component Character**

Next, the researcher writes down the path that connects several categories. From this way the theory is formed, then from that theory the researcher makes a hypothesis or statement that links the categories in the coding paradigm. This category is referred to as the selected coding stage.

The researcher found that there were eight characteristics in selective coding as the findings in the formulation of the first problem related to the character of the English Online Laboratory component which consisted of:

1. The online English laboratory is a digital room consisting of hardware and software equipment that is integrated into one.

2. The English Online Lab is an interactive space between its users.
3. The English Language Online Lab is an effective online learning medium.
4. Online English Lab based on Technology and the Internet.
5. Online English Lab improves students' Hardskills and Softskills.
6. Online English Lab requires regular maintenance.
7. The online English laboratory is a virtual space that cuts distance, expands space and volume, and knows no time limit.
8. The online English laboratory has a dynamic and flexible nature where teachers can use a variety of media and platforms to teach various materials.

The eight coding analysis results in this selective coding are the main theories or concepts of the characteristics of the English Online Lab component. These findings will be discussed in the next discussion chapter. In theoretical coding, the researcher found that there are 5 substantive theories on the characteristics of the English Online Lab component, while the theories are:

1. Internet-based Hardware and Software Devices
2. Online Interactive Learning Media
3. Skill Enhancement Media
4. Semi-Autonomous Unit
5. Ubiquiti Device

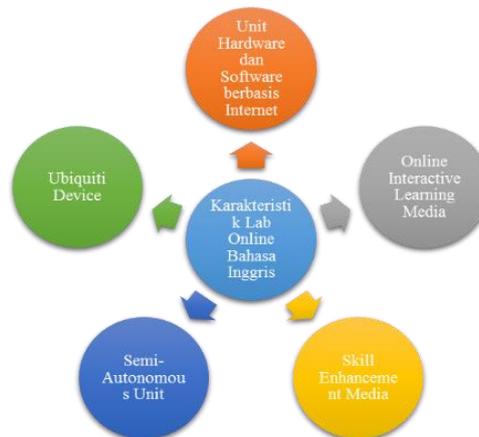
The five theories about the characteristics of the Online Lab above are the results of coding analysis of the data collected and the researchers' interpretation.

## **B. Findings on the Characteristics of the English Language Online Lab**

### 1. Characteristics of the English Language Online Lab Component

The online English Lab component in this study consisted of equipment, equipment, and the nature of the media. In the following chart, the researcher obtains the theory of component characteristics in the English Online Lab. The five characteristics are:

- a) Internet-based Hardware and Software Devices
- b) Online Interactive Learning Media
- c) Skill Enhancement Media
- d) Semi-Autonomous Unit
- e) Ubiquiti Device



## Discussion

### Internet-based Hardware and Software Devices

Based on the results of interviews and observations in the online lab, the researchers found that there were two types of equipment used. The types of equipment are Hardware and Software, hardware equipment consists of: Laptop, computer set, camera, HP, Audio Video, and Lighting. In the software section, examples are 1) Applications for meetings such as Zoom meetings, Ms Teams, and Google Meets, 2) Learning media production applications such as Canva, PPT, TikTok, and Video Editors, 3) Communication applications such as WA and Telegram.

This characteristic is also supported by the theory found by (Kirkwood & Price, 2014) which states that technology in learning and teaching supports learning and teaching processes such as delivery mechanisms and design parameters to increase knowledge. Although the equipment used is different, there is a standard in the English Online Lab, namely computer equipment that is connected to the internet, either mobile or laptop. This is also supported by interviews with teachers, who stated that:

“The tools used, starting from the beginning of the video, use PPT or Canva. Video editing with cellphones and laptops with applications. Video capture with a cellphone camera, audio also with a cellphone or with a laptop. Headsets.”

Based on the coding carried out by the researchers, aspects of technology and the Internet have several codings that can improve learning, namely:

1. Internet as a support for Online Lab
2. Dependence on the internet network
3. Internet signal dependence
4. Device quality is good

5. Laptop or PC is better for learning
6. Online Lab technology is more efficient
7. Participants are free to choose tools
8. Outside sound is not coming in
9. No special tools

The role of the internet connection in the Language Online Lab is very important and significant. Internet is used to connect connections between users. The internet also functions to search for online media as teaching materials. So this Online Lab has a dependence on technology and the internet.

### **Online Interactive Learning Media**

Interactive activities between teachers and students in online labs are often found in the learning process. Interactivity in the learning process is divided into several stages, namely: a) Interaction during preparatory communication, which is used to determine the time, media, materials, and assignments that will be carried out during learning. b) Interaction during learning, such as discussing, asking questions or creating groups. c) Interaction when making assignments both individually and in groups.

The researcher found that there were 3 axial coding which stated about the process of interaction between teachers and students, the coding was

1. Online Lab Language attracts the attention of participants
2. Online Lab gives freedom to users
3. Online Lab makes it easy to interact and discuss

In attracting the attention of the Online Lab participants, the teacher communicates with the students. Teachers always take the time to talk at the beginning of time or build students' knowledge through dialogue. As in the interview with the teacher who stated that there were special actions or steps at the beginning of time to foster student attention.

“Most of them are full of attention. I always chase after them. Must always communicate and make time.”

Researchers found steps presented by the teacher to attract students' attention, namely good tools to make participants more concentrated, greeting to attract attention, regulations that support attention in the lab, duration of time to attract attention, oncam feature to monitor attention, and media variations in the online lab. to ensure students stay focused. This step is taken by the teacher to attract attention and build interaction with students so that teaching in the Online Lab is more successful.

Students also feel that the Online Lab is more interesting than the previous conventional lab, this is as stated in the interview, as follows:

"This is done by utilizing the latest features such as E-learning in the form of film screenings, advertisements, online presentations, online discussions, online quizzes, and others".

The freedom given by the teacher is related to where the students will look for information, videos or assignments given. After that, students can also interact such as discussing or collaborating. Online Lab provides features so that students can interact together, together or even in completing assignments online. Unlike conventional Labs where to do group work or discuss, we have to move places and rearrange equipment which will take time. The Language Online Lab has a special feature that can automatically manage interactions between hundreds of students easily, one of which is the Breakout Room feature in Zoom Meeting.

### **Skill Enhancement Media**

The forms of hard skills and soft skills that appear in learning in the Online Lab are computer skills, language, communication, problem solving, creativity, and collaboration. The online English lab is proven to be able to improve students' English skills, such as Listening, Speaking, Reading and Writing. Teachers take advantage of various sources that are displayed in the English Language Online Lab and in the process the competence of students is increased.

In the Hardskill study, with the technology in it, teachers and students can add their skills to technology, computers, learning tools, and editing.

"If the skill depends on the skill, for example a video will improve listening skills like on YouTube. With a lot of material on youtube. They have a lot of choices and additional material."

Soft skills of students in learning in the English Language Online Lab are found through interaction, socialization, problem solving in each task, social awareness, cooperation and communication. The English Online Lab has features and settings so that students can interact both openly and privately. This feature will make students more comfortable to socialize so that the problem solving process can be carried out properly. The data found by researchers through coding as follows:

1. Lab can control participant's attitude
2. Lab can be a means of increasing value
3. Lab is able to assess attitude
4. Lab can be used to assess activity
5. Lab can assess cognitive
6. Labs make students always ready
7. Labs increase participant awareness
8. Passing grades are not only from exams
9. Teachers are required to be creative

The coding explains how the learning process in the English Language Online Lab can improve students' Hardskills and Softskills.

### **Semi-Autonomous Unit**

The use of the Online Lab is mobile, meaning it does not become one place and can be done anywhere so that the Online Lab relies on an Internet connection and technological sophistication. Online Labs are connected by connectivity and are operated with several technologies related to hardware and software devices. Online Lab uses complex equipment, namely hardware and software. Hardware equipment requires maintenance related to electricity, hardware, cleanliness, the appropriate size and speed of RAM, and equipment durability. While on software, maintenance is carried out on software updates and conformity to the needs of teachers to carry out production processes or meetings.

Based on data found by researchers from the IT staff of UPT P3B, maintenance was carried out on computer units in the room, internet network, software and audio video devices. In the interview, the IT staff stated that:

"A good tool makes participants more concentrated, so routine online lab maintenance is needed on campus."

Teachers and students who are at home also carry out periodic maintenance of the equipment used. Maintenance that is often carried out is updating software, ensuring the laptop/HP is in good condition, upgrading the laptop/HP, maintaining audio video equipment, and ensuring a good internet network. The purpose of this treatment is to keep learning going smoothly because teachers need a lot of teaching materials as learning media. Smooth learning will make students focus and receive material optimally. Researchers found that there was coding in the English Language Online Lab treatment, as follows:

1. A good tool makes participants more concentrated
2. Online lab routine maintenance is required at the campus
3. Campus official software subscription
4. Tool quality is good
5. Laptop PCs are better for learning
6. Minimal Distraction
7. No problems from the teacher

The teacher said that with regular maintenance so that the equipment can run smoothly it will make the participants concentrate more. The maintenance is not only carried out on campus but users at home also carry out routine maintenance because learning is carried out every day. UPT P3B also subscribes to official software, this is done so that all features can be used optimally and there are no sudden restrictions by the authorities. The UPT P3B guarantees that the equipment on campus has met good lab standards and for the implementation of online classes there are standard tools or software used. In the process of online learning at the English

Online Lab, the lecturers and students stated that there were no significant problems related to damage or other serious incidents on the devices used.

### **Ubiquiti Device**

Users, both teachers and students, feel that the Online Lab has an effectiveness and efficiency factor that is much different from the conventional Offline Lab. The effectiveness side consists of time, location, funds and equipment needed. Teachers and students can run and open online learning using the English Language Lab anywhere and anytime. This English Language Online Lab device and concept also has no limitation on number or space.

Researchers found that the Online Lab is an online classroom that can effectively save money, time, and space. Teachers can conduct their learning at home or while on the move without disturbing each other. The campus also only provides one set of computer equipment to organize learning in the English Language Online Lab. Students at home can attend lectures on the condition that there is an internet connection. This is in accordance with the results of interviews with UPT P3B teachers, namely:

“This is very efficient, we just stay at home and go online. Most can follow.”

When compared to conventional Labs which require a lot of costs, maintenance, additional personnel, and additional operations, the Online English Lab can cut all of that. The effectiveness of the Online Lab is found in costs that can be adjusted to the conditions of teachers and students. Students who have limited funds can continue to take lessons with the minimum requirement of having a Smartphone connected to the internet, which is now common for us to find smartphones or cellphones at very affordable prices. This English Online Lab has advantages in terms of place, time, volume and distance. Learning in the English Language Online Lab does not require teachers or students to come to campus. This of course makes the distance of the participants will not affect the learning provided there is still an internet connection. The data available at UPT P3B shows that the origin of the students is not only in Surakarta, Central Java and Indonesia, but the participants or students come from abroad. This data proves that the English Language Online Lab can accommodate students from sharing locations without distance restrictions.

“Teachers can open classes anywhere because the Online Lab can be used anywhere. ”

The interview excerpt provides evidence to researchers that learning in the Online Lab is not bound by location restrictions. Likewise, the space used, such as in Zoom Meetings can accommodate more than 100 participants/students in each meeting. In contrast to conventional labs in classrooms, which can only accommodate about 30 students. This number of course will make the number of registered students will be divided then make operations will increase. Several platforms were found by researchers, either in Zoom Meetings, Google Meets or Ms Teams, these platforms were able to accommodate more than 100 students and without any problems. Some of these platforms also provide features to optimize learning such as settings so that students are quiet (mute), divided into several rooms, interact, mark their own names so as to facilitate identity, or communicate privately.

## Conclusion

This study aims to build a conceptual theory of the design of the English Language Online Laboratory based on education 5.0 by using the Straussian Grounded Theory research method. More deeply, this research is about the characteristics of Language Virtual Laboratory components and aspects. Based on the findings and reinforced by the ICT approach, the researchers obtained 5 characteristics of the English Online Lab based on data analysis using the grounded theory method, as follows a. Internet-based Hardware and Software Devices, b. Online Interactive Learning Media, c. Skill Enhancement Media, d. Semi-Autonomous Unit, and e. Ubiquiti Device

Learning in the English Language Online Lab makes it easy for users to hold lessons with unlimited time. This means starting learning activities that do not need to wait for the campus to open or the room needs to be prepared in advance or not to worry that the campus will close soon because it is night. Online English Lab which can be held anytime makes teachers more efficient in managing their learning time, as well as students who do not need to move rooms or buildings so that it takes time for learning.

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