Teacher Digital Literature in East Java During the Covid-19 Pandemic

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Abstract:- This study aims to find out the problems of teachers in East Java in managing learning and efforts to improve teacher competence in managing learning in the digital era during the covid-19 pandemic. The method used in this research is descriptive quantitative which describes, explains phenomena in various conditions or various research variables. The study was conducted in East Java with a sample of 26 randomly selected teachers. Based on the results of the study, learning in the digital era during the COVID-19 pandemic requires digital literacy among teachers in managing effective learning. Digital literacy aims to improve critical, creative and positive thinking skills in using digital media in everyday life, especially in the field of education.

Keywords:- Digital Literacy, Teachers, Covid-19 Pandemic.

I. INTRODUCTION

At the beginning of 2020, the world was shocked by an epidemic that attacked the world's population. On March 14, 2020, the Indonesian president through the Head of the National Disaster Management Agency declared that Corona Virus Disease 19 (Covid-19) was a national disaster based on Law No. 24 of 2007. This epidemic had many impacts from various sectors, ranging from politics, economic, religious, geographical, demographic and especially in the education sector. Education in Indonesia in a pandemic situation experiences many obstacles that have an impact on the future and must carry out many adjustment processes (Chick et al., 2020). The government has designed various efforts to break the chain of this virus's proliferation, including government regulation no. 21 of 2020 against large-scale social constraints in the context of accelerating the processing of Covid19, which leads to restrictions on various activities. Based on the facts around them, these obstacles come from geographical conditions (location of the house to reach the availability of the internet to access online learning); the role of family, school and community (supporting learning at home); teacher and student communication; availability of facilities; and intensity of use of access to information. Digital media has a role in making it easier for users to share information. The rapid presence of digital media has also become part of the development of the internet in the world. Digital media offers various easy ways to interact, communicate and socialize supported by attractive features.

The Indonesian Internet Service Providers Association (APJII) stated that the survey results of internet users in Indonesia until the second quarter of 2020 rose to 73.7 percent or equivalent to 196.7 million users. The Central Statistics Agency (BPS) stated that this number has almost penetrated

200 million users from the Indonesian population of 266.9 million. The General Chairperson of APJII explained that the increase in the number of internet users was also due to the fast internet infrastructure in Indonesia which was increasingly evenly distributed due to the implementation of the online learning system (online) since March 2020. The results also stated that the majority of users access the internet more than eight hours in one day, and content that is widely accessed is education and school pages.

There are many inputs in the implementation of distance education (online) because this policy has been communicated, both between parents, students and teachers (Meganti et al., 2020). Mastery of technology and different conditions in each region are the biggest obstacles in distance learning. While digital advances are so rapid and support distance learning it still takes time to adapt for the perpetrators. Several studies show that information, communication, and technology skills for teachers in Indonesia are still not evenly distributed in all regions (Widodo and Riandi, 2013). In addition, there are gaps in the quality of education in various parts of Indonesia, especially between Java and outside Java (Muttaqin, 2018; Azzahra, 2020).

Seeing these conditions, the teacher's role is a role that cannot be easily replaced, especially in imparting knowledge and formation to students (Sudrajat, 2020). Therefore, adjusting to this condition, teachers must improve their competence, especially in developing digital literacy skills for teachers in East Java. One of the ways to improve teacher digital literacy competence is that it can be developed through training activities related to creativity in managing classroom learning during a pandemic. Thus, a teacher who has competence, skills and creativity in learning is expected to be able to overcome online learning problems during the COVID-19 pandemic.

II. LITERATURE REVIEW

A. Literacy

Broadly, literacy is defined as the ability in language which includes the ability to listen, speak, read, write, and think which is an element in it. In the book Master Design Literacy Guidelines by the Ministry of Education and Culture (2018:7) it is explained that the term "literacy" comes from the Latin *literatus (litera)* which is the same as English with the word *letter* which means the ability to read and write. Meanwhile, at this time the notion of literacy develops into the ability to master knowledge in certain fields. In Law No. 3 of 2017 concerning the Book System, literacy is defined as the ability to interpret information critically so that a person

uses science and technology to improve the quality of life (Kemmendikbud, 2018: 7). And referring to a person's ability is often interpreted by the term literet (literate) which can be interpreted as educated, well read, scholar, educated, knowledgeable, intellectual, educated, educated.

B. Digital Literacy

Paul Gilster first put forward the concept of digital literacy in his book entitled *Digital Literacy*. Gilster defines digital literacy as the ability to understand and use information in various forms and various sources that can be accessed through digital devices effectively and efficiently in various contexts such as academic, career, and everyday life. (Gilster, 1997 in Riel, et. Al. 2012:3). Bawden (2001) offers a new understanding of computer literacy/digital literacy and information literacy. That is, digital literacy can simply be defined as the ability to understand and utilize information from various typical formats of information sources that are more widely accessible and displayed via computers. Thus, related to Bawden's opinion, digital literacy is related to technical skills in accessing, understanding, compiling and disseminating information. Digital literacy should not only be about a person's ability to use digital media effectively, but digital literacy is also related to how to think about things (Eshet, 2002).

Digital literacy as a series of the media literacy movement is designed to increase control within individuals in utilizing the media used to receive and send messages. The most important meaning of digital literacy is the ability to have a filter or control over media that can be used as information retrieval. The scope of digital literacy is technological literacy, information literacy, responsibility literacy and competence. Knowledge of technological literacy adapts to the theory of technological determination which suggests that people in their lives follow technological developments (Silvana & Darmawan, 2018). According to Steve Wheeler (2013) in a book entitled *Digital Literacies for Engagement in Emerging Online Cultures* suggests that there are nine main components in the world of digital literacy including:

- *Social Networking* , the emergence of various social media is one manifestation of the description of online social phenomena, where in every life, humans are always in contact with the virtual world. Digital literacy shows how to use social media well.
- *Transliteracy,* is the skill in using all the different things, especially in content creation, collecting, sharing and discussing through several social media.
- *Maintaining privacy,* including protecting oneself from online life, including learning about *cybercrime* through ATM cards, credit cards, email and so on.
- *Managing digital identity,* relates to how the procedure is to interpret the appropriate identification on several social media sites.
- *Greating content,* relates to expertise in the process of creating *content* on several cyber sites and platforms.
- *Organizing and sharing,* namely managing and distributing news with the aim of making it easier to disseminate
- *Reusing/repurposing content, is* able to create content from various types of available information to produce

new content so that it can be used in a longer period of time.
- *Filtering and selecting, the* ability to browse, sort, to filter information / news according to the desired needs.
- *Selfbroadcasting,* conveying new ideas/ideas in media such as forums or blogs. This is a type of participation in cyberspace (Mustofa & Budiwati, 2019).

Digital literacy in the 21st century includes learning skills, innovation and critical thinking. According to Alkalai (2004), there are types of skills that include the term digital literacy including:

- *Photo-visual literacy* is the ability to work effectively in reading to infer information from visual media, such as user interfaces that use graphic communication.
- *Reproduction literacy* is the ability to create authentic, meaningful written works of art by reproducing and manipulating digital text, visuals, and using pre-existing audio snippets.
- Branched literacy, is the ability to build knowledge by navigating non-linear media originating from the digital space, such as the internet and other hypermedia environments.
- *Information literacy,* is the ability to search, find, assess and critically evaluate information found in digital media;
- Socio-emotional *literacy,* are aspects that refer to someone's emotions that appear online either through socialization, collaboration, or just consuming content.

Bawden (2001) also mentions that digital literacy involves several aspects including:

- Knowledge assembly is the ability possessed by a person in creating information taken from various reliable sources.
- The ability to present information, which includes the ability to think critically in understanding information so that the validity of the information can be known.
- Ability to read and understand unsystematic information material.
- Awareness of the importance between conventional media and internet media.
- Awareness of credibility, it can be used as a source of reference and help in responding to an information.
- Skills to filter an information.
- It is easy to have access to consult and publish information.

From some of Bawden's statements, it can be emphasized that digital literacy is something related to skills in accessing, integrating, understanding, and disseminating information appropriately.

Douglas AJ Belshaw in the thesis What is 'Digital Literacy'? (2011) suggests that there are eight essential elements that support the development of digital literacy as follows:

- Cultural, namely understanding the various contexts of using the digital world;
- Cognitive, namely the power of one's mind in assessing a content;

- Constructive, namely the creation of something expert and actual;
- Communicative, namely understanding the performance of communication networks within the scope of digital media;
- Confidence accompanied by responsibility;
- Creative, namely doing something in a new way / never done before;
- Critical in addressing a content;
- Socially responsible.

From these several elements, it is hoped that the application of digital literacy can increase one's understanding cognitively, communicatively, have creativity, and be more critical in consuming media so as to avoid the spread of fake news, and information spread on social media will be more accountable for its truth.

According to the *California ICT Digital Literacy Assessments and Curriculum Framework (2008)* , digital literacy is the ability to use digital technology and communication tools, networks to access, integrate, manage, evaluate, create, and communicate information so that it can become knowledge for the public. public.

In Bhatt's research (2012) describes the results of research on digital literacy competencies that the core in digital literacy is communication and information technology skills. So someone who has digital literacy skills is expected to be able to master the use of digital technology devices. The digital device in question is not only the internet, but various types of effective mastery of communication systems.

According to the Ministry of Education and Culture (Kemendikbud) in a book entitled "Digital Literacy Supporting Materials" in 2017 states that digital literacy is about a person's knowledge and skills in using digital media, communication tools and networks in the act of finding, using, creating information as well as utilizing it effectively. healthy, wise and careful, and obey the law in fostering communication in the scope of daily life.

The abilities possessed by each individual are influenced by many different factors so that it can create a gap in the use of digital literacy itself. According to Hargittai (2003) and Dewan et al (2005), the digital divide occurs between those who have access and have the ability to utilize ICT with those who do not have the ability to use it. There are three main aspects of the interconnected digital divide (Camacho, 2005; Servon, 2002):

- Access/Infrastructure (*access/infrastructure*): the differences that each individual has in obtaining access/infrastructure of Information and Communication Technology, causing inequality in the distribution of information.
- Ability (*skill & training*): the differences of each individual in utilizing the access and infrastructure of Information and Communication Technology obtained.
- Information *content* (*content/resource*): each individual has different abilities in utilizing the required information

content. Information processing skills possessed by each individual can affect the use and access of information technology.

Meanwhile, according to the *California ICT Digital Literacy Assessment and Curriculum Framework* (2008) there are six basic elements in digital literacy as follows:

- *Access* , knowing how to collect and obtain information in the digital sphere.
- *Manage,* identify and regulate whether the information is relevant and in accordance with the needs of the organization that will be applied to the future of an organization.
- *Integrate,* convey and reinterpret information by combining and drawing conclusions from information from various sources of Information and Communication Technology.
- *Evaluate,* make an assessment of the quality, usefulness or efficiency of information for a particular purpose.
- *Create,* creating / generating new information based on what has been obtained from digital sources then adapted, designed and presented as new information.
- *Communicate,* communicating an information to meet the information needs of the audience through the use of appropriate media.

California ICT Digital Literacy Assessment and Curriculum Framework is an assessment standard in using Information and Communication Technology that is intended for students and educators in the 21st century. This assessment standard includes the ability to use digital technology, communication tools, networks to access the internet, access, manage, integrate, evaluate, create and re-communicate information. The researcher chose the concept of measuring digital literacy using 6 basic elements according to the *California ICT Digital Literacy Assessment and Curriculum Framework* because these 6 elements can represent the condition of teachers in East Java in implementing digital literacy for teaching and learning activities in the COVID-19 pandemic situation.

Based on the report of the Kompas (2020) team, a number of regions in Indonesia show that the implementation of online learning activities still cannot run optimally, especially in remote areas with limited technology and internet networks. Thus, the problems of online learning in Indonesia during the COVID-19 pandemic include the readiness of school infrastructure, the ability of teachers to learn online, and the limited availability of smartphone facilities. According to Purwanto et al (2020), some of the obstacles experienced by teachers, students, and parents of students in the implementation of online learning activities include the lack of mastery of technology, the low level of communication and socialization between teachers, students and parents which is reduced due to unlimited teacher working hours that require communicating with parents, other teachers, and principals. In addition, Anugrah (2020) mentions other problems that are received when conducting online learning, namely the increasing number of teacher assignments, and the limited internet quota network used.

Changes in patterns in teaching and learning activities will never be separated from the role of a teacher (Collie et al., 2011; Najeemah M Yusof, 2012; Thien et al., 2014; Zacharo et al., 2018). Especially in times of changing online learning patterns, teachers must be prepared with various conditions in dealing with these changing patterns, including student development and life in society (Abdullah, 2016; Darling-Hammond & John Bransford, 2005; Zein, 2016). Schools in Indonesia have tried to implement an online learning system or distance learning. So that teachers and students are increasingly familiar with the technology used for online learning media. The applications used are *whatsapp group, zoom, google classroom, google form* and *email.* Teachers and students use these applications according to their respective abilities. Technological developments are used as an alternative to previously unforeseen circumstances that greatly affect teaching and learning activities in the Covid-19 pandemic condition (Kompas Team, 2020).

Teacher competence is the main determinant of success in the teaching and learning process, including in Indonesia. The teacher tries as much as possible in order to optimize the existing capabilities and facilities to support it in order to succeed. The role of the teacher as an organizer of the learning environment as well as a facilitator in learning. Teachers also play a role in directing and providing learning facilities to students *(directing and facilitating the learning)* so that the learning process can be adequate and does not necessarily only provide information (Zein, 2016).

III. METHOD

This research was conducted in August 2021 when learning was conducted online (online), by examining a number of teachers in East Java. This research uses descriptive quantitative research methods. The research sample in the article is 26 teachers from schools in East Java who are represented from several regions. The sampling technique used was purposive sampling technique where this sampling followed the needs of the researcher. Data collection was carried out through the provision of questionnaires and observations of online learning methods for teachers during

the pandemic which was carried out during webinars. The analysis used in this study is to calculate the percentage of the sample answers then tested using theory to determine the extent to which educators understand and apply digital literacy in managing learning in the Covid-19 pandemic era.

IV. RESULTS AND DISCUSSION

A. Respondent Description

Respondents in this study were educators (teachers) in several districts/cities in East Java totaling 26 people. Age at most 25-34 years (53%). Among the 26 respondents, 50% have a bachelor's degree (S1) and 50% have a 2nd degree (S2) education. Comes from each school with status public as much as 34.6% and private 65.4%. Judging from the utilization in the use of the internet, the intensity of internet use of each respondent is different, respondents who use the internet to academic activities ≤ 1 hour by 2 persons (7.7%), 2-3 hours as many as 12 people (46.2%), 4-5 hours of 7 people (26.9%) and ≤ 6 hours for 5 people (19.2%).

B. Digital Literacy Among Teachers

Improving the competence of educators (teachers) in changing patterns of the times is the main focus in order to be able to adapt to the conditions of the world of education at this time. In an effort to increase teacher competence, the focus is not only on pedagogic, professional, personal and social competencies, but also on increasing competence in the use and mastery of digital technology. Especially in the era of the covid-19 pandemic, teachers must be able and have additional skills in supporting online learning activities, these skills in the form of digital literacy skills. Research shows that most teachers in East Java have implemented the concept of digital literacy in the learning process during the pandemic. By applying the concept of digital literacy according to the *California ICT Digital Literacy Assessment and Curriculum Framework* (2008) which has six basic elements including *Access, Manage, Integrate, Evaluate, Create,* and *Communicate,* the following results are obtained.

C. Digital Literacy on Access Elements

No.	Statement	Respondent's Answer					Total
		1	**2**	**3**	**4**	**5**	
		STS (%)	TS (%)	N(%)	S (%)	SS (%)	
1.	I am able to use In-App features of browsers (such as mozilla firefox, google chrome, internet explorer, etc.) in finding information for learning	0	0	0	42.3	57.7	457.7
2.	I take information from blogs and scientific articles for teaching and learning activities	0	0	19.2	65.4	15.4	396.2
3.	Before downloading, I saw the entire contents first, according to my needs	0	0	0	50	50	450

Table 1

Access element shows the ability to obtain and collect information obtained from digital media (California Emerging Technology Fund, 2008). Based on the research results obtained in table 1 point 1 digital literacy of teachers in East Java is reviewed on the *Access* element explaining the ability

to use features in browser applications (such as mozilla firefox, google chrome, internet explorer, etc.) in finding information for learning activities. It can be seen in the table that the respondents stated that they strongly agreed at 57.7%.

After carrying out the process of searching for information from various browser applications, the teachers fulfill the information needs for teaching and learning activities by taking information from blogs and scientific articles. This is explained in the table in point 2, a total of 65.4% of respondents agreed with the indicator.

In the information search process, before downloading, the teacher sorts the information by looking at the overall information that has been obtained whether it is suitable for use as learning material. This is explained in the table point 2 of the respondents 50% agreed and 50% stated strongly agree.

D. Digital Literacy on Elements of Manage

No.	Statement	Respondent's Answer					Total
		1	2	3	4	5	
		STS (%)	TS (%)	N(%)	S (%)	SS (%)	
1.	After downloading, I moved the file into a new folder.	0	0	7.7	65.4	26.9	419.2
2.	I group files according to their respective subjects.	0	0	3.8	53.8	42.3	438.1
3.	I group files into folders according to download date.	0	11.5	30.8	50	7.7	353.9

Table 2

Management or managing is identifying and organizing relevant information according to organizational needs that can be applied in the future (California Emerging Technology Fund, 2008). Managing information is done so that it can easily search for the information needed. Managing information can be done by moving files that have been downloaded into a new folder that was previously downloaded on a smartphone, computer, laptop. As contained in table 2 point 1 respondents agreed as much as 65.4%.

Grouping downloaded files according to the desired category that is needed can make it easier to find information. The teachers group files into folders based on their respective subjects, this statement is supported by point 2 table 2as many as 53.8% of respondents agree. In line with Sutarto's (1980) statement that scripts (documents, items) that have certain uses that are stored systematically, when they are needed, they can be found quickly. Examples of such grouping, for example, as in point 3, namely grouping on the date that corresponds to the download, the statement received answers from respondents as much as 50% agreed.

E. Digital Literacy on Integrated Elements

No.	Statement	Respondent's Answer					Total
		1	2	3	4	5	
		STS (%)	TS (%)	N(%)	S (%)	SS (%)	
1.	To get correct and valid information, I look for trusted sources (such as Google Scholar, journals, etc.)	0	0	3.8	65.4	30.8	427
2.	Every time I get new information, I always double-check the truth of the information from various sources	0	0	3.8	53.8	42.3	438.1
3.	I looked for information from various sources and then summarized it.	0	0	7.7	61.5	30.8	423.1

Table 3

Integrate is the act of delivering and reinterpreting information by integrating, summarizing, drawing conclusions and at the same time distinguishing information from various sources (California Emerging Technology Fund, 2008). In seeking and finding the truth of correct information and having a value of validity, school teachers in East Java look for trusted sources of information such as Google Scholar, journals, etc., respondents answered agree on the statement as much as 65.4%.

After receiving new information from a reliable source, the next thing to do is to re-check the truth of the information from various sources, as many as 53.8% of respondents answered agree to the statement. The source in question can be a digital source or to other people, as stated by Bystrom (2002) that someone will tend to use colleagues as a source of information that has been obtained.

From the various information that has been collected, before disseminating information to others, it is necessary to summarize the information first so that the information is easily understood and accepted by others, as many as 61.5% of respondents agreed with the statement.

F. Digital Literacy on Evaluate Elements

No.	Statement	Respondent's Answer					Total
		1	2	3	4	5	
		STS (%)	TS (%)	N(%)	S (%)	SS (%)	
1.	I always double-check the information to make sure it fits my needs.	0	0	7.7	53.8	38.5	430.8
2.	I double check the information before sharing the information	0	0	0	53.8	46.2	446.2
3.	I only read the information in outline without reading all the contents, to save time.	3.8	38.5	23.1	26.9	7.7	296.2

Table 4

Evaluate is the formation of an assessment of the quality, relevance, usefulness and efficiency of information in achieving certain goals (California Emerging Technology Fund, 2008). The activity of evaluating information can be done in several ways including checking the information to match the desired needs, in accordance with table 4 point 1 respondents agreed as much as 53.8%.

After finding the information obtained in accordance with the needs, then before sharing it should be rechecked the truth of the information in order to avoid *hoaxes* or information that is not true, according to point 2 of table 4 respondents agreed as much as 53.8% where most of the teachers had have the ability to check the truth or validity of information before it is distributed.

Widiatmoko (2011) states that one of the benefits of *skimming is* that it can create efficiency. However, contrary to the field results that there are still many teachers in East Java who still choose to read all the contents of the information that has been obtained because they want to deepen and understand the information, it can be seen from the statement in table 4 point 3 that as many as 38.5% respondents answered that they did not agree to choose to read only the outline for the sake of time efficiency.

G. Digital Literacy on the Create Elemen Element

No.	Statement	Respondent's Answer					Total
		1	2	3	4	5	
		STS (%)	TS (%)	N(%)	S (%)	SS (%)	
1.	I make files in the form of power point, word, or video for learning activities	0	0	7.7	57.7	34.6	426.9
2.	I made a question 1training for learning activities.	0	0	3.8	50	46.2	442.4
3.	I am able to make teaching material books and LKS (Student Worksheets)	0	0	23.1	53.8	23.1	400

Table 5

Create or create is to produce new information that is generated by adapting, designing, implementing, and presenting information that has been obtained (California Emerging Technology Fund, 2008). One of the teacher's tasks in developing the profession is to make scientific/written works in the field of education (Depdiknas, 2001). Teachers cultivate and generate new information from some of the information has been obtained previously as a learning support materials, such as in Table 5 the first points of the respondents agreed as much as 57.7% bahwasannya *create* new information could be create media files with applications such as power point, word, excel as well as videos.

In addition to making files with the media mentioned above, the teachers also created new information in the form of practice questions, this was supported by the statements of respondents who agreed as much as 50%. To help the teaching process, the teacher also added to make teaching material books and LKS (Student Worksheets), according to the third 5 pound table as many as 53.8% of respondents agreed with this statement.

H. Digital Literacy on Communicate Elements

No.	Statement	Respondent's Answer					Total
		1	**2**	**3**	**4**	**5**	
		STS (%)	TS (%)	N(%)	S (%)	SS (%)	
1.	I am able to discuss learning materials in online media (whatsapp, zoom, meet, etc.) with fellow colleagues or students.	0	0	3.8	69.2	26.9	422.7
2.	I am able to upload my own work on online learning media (google classroom, drive, and the like).	0	0	19.2	46.2	34.6	415.4
3.	I am able to repost (repost) other people's work of learning materials.	3.8	15.4	34.6	38.5	7.7	330.9

Table 6

Communicate is communicating information to meet the needs of the audience through the use of appropriate media (California Emerging Technology Fund, 2008). Communicating information can be in the form of self-created information or information from other sources. In using social media, users generally create groups that have the same information needs, such as groups between teachers and students in certain lessons, or groups between teachers and teachers formed to discuss a lesson. This is supported by the statement of respondents agreeing as much as 69.2%.

According to Sutanta (2003) the benefits of information are increasing knowledge, reducing uncertainty in using information, reducing the risk of failure, diversity that is not needed to provide a standard for decisions in achieving a goal. In line with the results of the study in table 1.6 point 2 that respondents are able to upload their own creations into online learning media so that the information shared can be used by anyone who needs it, respondents answered agree as much as 46.2%. Then at point 3 states that the teacher has been able to re-communicate the information he has obtained and share information from various sources, the statement received an agreed answer of 38.5%.

Judging from the description above, it can be said that digital literacy in terms of *communicating* elements at points 1 and 2 literacy among teachers in East Java is quite high and, in contrast to point 3. there is a misunderstanding in the statement of point 3, some teachers assume that what is meant by *reposting* other people's work is an act of plagiarism and is not appropriate to do, but what researchers *mean* by *reposting* statements is the ability to process information and quote other sources of information later. presented and distributed to students through predetermined learning media. Based on these different assumptions, it can be seen that the teachers in East Java are *literate* on the information and sources that have been received.

V. CONCLUSION

Based on the description and discussion above, the following conclusions can be drawn:
➤ Digital literacy is the ability to use digital information and communication technology efficiently and accurately to access, manage, interpret, evaluate, create and communicate information and knowledge to the wider community.
➤ The application of digital literacy among teachers during the COVID-19 pandemic is very helpful in maximizing online learning (online).
➤ To anticipate the spread of information that is not necessarily true, it must be used wisely and carefully in dealing with new information.
➤ Based on these data, this research is only limited to digital literacy skills for teachers, therefore further and more detailed research is needed to use concepts and theories that are more concrete and *relate* to digital literacy research during a pandemic.

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