



Development of Moodle-Based E-Learning on the Website for German Reading Skills A2

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Abstract: *This study examines the use of Moodle-Based E-Learning on the website for German reading skills A2. The purpose of this study is to define and explain how Moodle-based e-learning can be used in German reading skills A2 because of the low achievement of students in reading skills and not optimal use of the internet in supporting learning success. LMS is one way to develop online learning or e-learning, which is a web-based learning management application that facilitates learners to learn properly in a virtual classroom, a class in a virtual world. The LMS used in this study is a Moodle-based LMS. An analytical descriptive strategy was used as a research method. Therefore, the use of Moodle-based e-learning is very suitable for use in learning German, given that currently the world of education cannot be separated from technology and internet networks, besides that there are many educational institutions that have been facilitated by infrastructure in utilizing existing technology. It is also proven that learning with the Moodle as LMS application is more effective than conventional learning in improving students' reading skills. From some of the results and research findings, several suggestions related to this research were put forward, the point of which is that it is time for a change in mindset in responding to the internet as one of the factors that support learning success.*

Keywords: *LMS; E-learning; Moodle; German reading skills A2*

I. Introduction

The internet as one of the developments of information and communication technology (ICT) products has now enabled the emergence of various forms of innovative web-based learning, known as e-learning. Many educational institutions have provided these online learning facilities, including the State University of Medan (UNIMED). Supported by adequate ICT infrastructure and through the UNIMED Strategic Plan. UNIMED has made ICT-based learning one of its development priorities, one of which is the provision of internet-based learning facilities or what is called an LMS. Online learning facilities provide virtual classrooms per course for each department and study program at UNIMED. However, of the many virtual classrooms that are available, the German Language Education Department has not optimized it well.

In the German Language Education Department itself, the implementation of the learning process so far is still carried out in the form of meetings in class as usual. Although classroom learning has so far been presented with a variety of interactive and innovative learning methods and techniques, the role of the internet in learning tends to be underutilized and involved as an effort to broaden students' horizons in developing their language skills. In learning a foreign language, in this case German, the role of the internet cannot be ruled out. The internet provides millions of sources of information that can be used to help success in learning. The internet, for example, can provide a solution to the problem of the scarcity of German reading resources, where students can take advantage of the sophistication of the internet to access various sources about Germany and the German language through.

hundreds of pages available online. In addition, they can also access other learning materials through various websites that provide information and applications related to learning German, such as discourses, grammar exercises, dictionaries, and so on.

Learning German language skills in the German Language Education Department is presented in four different courses with naming adapted to the aspects of the language skills being taught, namely *Hören* (Listening), *Sprechen* (Speaking), *Lesen* (Reading), and *Schreiben* (Writing). By not ignoring other language skills, reading ability is observed to have a very important role in learning a foreign language, in this case German. This is based on the fact that the heart of education or learning is reading, where by reading, a science can be learned and mastered. Thus, it can be assumed that reading skills can support student success in other language skills. From experience and observations so far, many students of the Department of German Language Education at the Faculty of Languages and Arts at UNIMED still tend to have difficulty understanding A2 level German reading. This can be seen from the student achievement in reading skills that is still not satisfactory. In addition to the German language factor, which for most students is a newly learned foreign language, for them reading is an activity that is carried out with difficulty by translating word for word without capturing what information is contained in the reading. One of the observable factors that caused this to happen was their lack of habit in reading German texts. This happens because students are not used to reading German texts outside the classroom independently, as well as the lack of available reading sources in the form of authentic German texts that are easy to find in Indonesia, when compared to reading sources in English.

The lack of availability of authentic reading sources can actually be overcome by using the internet. The internet is no longer a new thing for students today. If students can carefully utilize the internet and all the sources of information contained in it, it is not impossible that the internet can motivate and help them to get used to reading German texts independently, so that by themselves they can improve their reading skills. From the two problems described above, namely 1) the lack of optimal use of the internet in learning, and 2) the low ability of students in reading skills in German at A2 level, there is an interest in seeking a solution through a research. From the background of the problem, a study was proposed on the use of the LMS application in learning as well as to find out whether the application of the LMS can be effective in improving the ability of students of the Department of German Language Education at the State University of Medan in reading comprehension A2.

One of the advantages offered by learning with the support of internet technology is that it makes the center of attention in learning focused on the learner, and not completely dependent on the lecturer (Munir, 2021: 205). Thus, learners have full opportunity to be able to develop their knowledge and be active in learning as suggested by the constructivism view (Sudrajat: 2020). One of the many types of learning via the internet is the Learning Management System (LMS) application. This application not only offers convenience for lecturers in delivering learning content, but also provides opportunities for learners to engage in flexible and interactive learning activities. Interaction in this case is not only the interaction of the lecturer with the learner, but also involves the interaction of the learner with the learning content. By creating an internet-based learning environment, students will also be accustomed to interacting with the internet for the development of their German language skills, in this case reading skills.

From the description above, several assumptions were made that underlie the implementation of this research. First, the application of LMS can improve students' ability in

reading German skills; and secondly, compared to conventional learning, classroom learning by applying LMS is more effective in improving students' abilities in reading German skills. Thus, this study aims to examine whether the LMS application is effective in improving the ability to read German at A2 level, as well as to investigate whether the application of the LMS application in learning is better than conventional learning in the classroom in improving students' reading comprehension skills in German texts A2.

II. Review of Literature

Basically e-learning is learning that represents all categories of technology-based learning. While online learning or also web-based learning is part of e-learning. However, along with technological developments and the occurrence of shifts in content and adaptivity, currently the classic definition of e-learning has changed to a more contemporary definition, namely a management of learning through internet or web media which includes aspects of material, evaluation, interaction, communication and collaboration. (Surjono, 2022). Currently e-learning is even an alternative to solve various educational problems, especially after the facilities that support the implementation of e-learning such as internet, computers, electricity, telephone and other hardware and software are available at relatively affordable prices, so e-learning as a Learning aids are becoming more and more in demand. In addition, the term e-learning includes various applications and processes such as computer-based learning, web-based learning, virtual classrooms, and others; Meanwhile online learning is part of technology-based learning that utilizes internet, intranet, and extranet resources.

Compared to conventional or classical learning, the main advantages of learning with e-learning systems are in terms of flexibility and interactivity. With e-learning learning materials can be accessed anytime and from anywhere. In addition, learning materials can be enriched with various learning resources including multimedia and can also be updated quickly by lecturers. In terms of interactivity, e-learning also allows for direct or indirect learning and complete visualization (multimedia) or not. The application of an e-learning system is very varied and there is no standard yet. From observations on various existing web-based learning systems, the implementation of e-learning systems varies from simple to integrated. Although the implementation of the current e-learning system varies widely, all of them are based on a principle or concept that e-learning is intended as an effort to distribute learning material through electronic media or the internet so that students can access it anytime from all over the world. The characteristic of learning with E-learning is the creation of a flexible and distributed learning environment (Surjono, 2022).

Flexibility is the key word in the e-learning system. Students have flexibility in choosing a time and place to study because they do not have to come in one place at a certain time. Lecturers can also update their learning materials anytime and from anywhere. In terms of content, learning materials can also be made very flexible, ranging from text-based lecture materials to learning materials loaded with multimedia components. Likewise, the quality of learning, which can be very flexible or varied, which can be worse or better than the face-to-face learning system (conventional). Therefore, to create a good e-learning system requires a good design and appropriate instructional design strategies and methods. Meanwhile, distributed learning refers to learning in which lecturers, learners, and learning materials are located in different locations, so that learners can learn anytime and from anywhere.

From several e-learning systems that have been developed and viewed in terms of their interactivity, in general they can be divided into two types, namely systems that are static and those that are dynamic. In the static type, the users of this system can only download the

required study materials, while from the administrator's side, he can only upload material files. In this system, the actual learning atmosphere cannot be presented, for example communication. While in the dynamic type, the existing facilities in this system are more varied than what is offered by the first type. Here, facilities such as discussion forums, chat, e-mail, learning evaluation tools, user management, and electronic material management are available, so that users are able to learn in a learning environment that is not much different from the classroom atmosphere.

There are many ways to develop an online learning system or e-learning, one of which is to use an LMS (Learning Management System) application, which is a device for creating web-based learning materials that manage learning activities and their results and facilitate interaction between lecturers and learners. between lecturers and lecturers, and between students and learners. LMS supports various activities, including: administration, delivery of learning materials, assessment (assignments, quizzes), tracking/tracking & monitoring, collaboration, and communication/interaction.

One of the most popular and free LMS applications is the Moodle LMS application. From the official website, it is revealed that Moodle was designed and developed based on the philosophy of "social constructionist pedagogy", which combines four related concepts, namely (1) constructivism, (2) constructivism, (3) social constructivism, and (4) connected ideology. and separate (connected and separated). Learning with the Moodle LMS application puts forward the interaction of the learner with his environment, in which it is hoped that the learner can learn independently to build his own knowledge; share knowledge with fellow learners; and discussing with each other as well as respecting differences of opinion that are common in a community. However, this Moodle application does not mean to force certain behavioral styles in learning, the four things described above are believed by the developers to be more suitable in supporting learning with the Moodle LMS application. Thus, the pedagogical concept that underlies the development of Moodle can be taken into consideration in determining what experiences students deserve in online learning, not just displaying information or learning materials according to lecturers that students need to know. This concept can also help realize that between lecturers and students have an equal position in online learning, where the role of a lecturer is no longer a mere 'source of knowledge' but also as a role model and motivator who facilitates students' activities to fulfill their learning needs in order to achieve their goals. expected learning.

The LMS application with Moodle allows lecturers to manage lecture materials, namely: compiling syllabus, uploading lecture materials, giving assignments to students, accepting student work, making tests/quizzes, giving grades, monitoring student activity, processing student grades, interact with students and fellow lecturers through discussion forums and chat, etc. On the other hand, learners can access information and learning materials, interact with fellow learners and lecturers, conduct transactions on lecture assignments, take tests/quizzes, see the achievement of learning outcomes, etc.

This Moodle LMS application is designed on the basis of a constructivism concept approach, where each individual can learn something new by comparing what they have just recognized with what they already know. They are expected to be able to construct their own knowledge based on their experience, through problem solving activities, collaboration and the like. This is actually in line with the concept of communicative language learning, which always helps students to have language competence in a real context. Thus, in learning foreign languages, in this case German, the application of the Moodle LMS application is very possible and is believed to bring many benefits. Moodle offers many learning activity modules that are

easy to use by both students and lecturers. Because of this convenience, lecturers have the flexibility to design and arrange learning activities according to the goals that have been determined and also according to what language skills are being taught.

III. Research Methods

This research was conducted at the Department of German Language Education at the Faculty of Languages and Arts at UNIMED using a quasi-experimental approach involving two groups, namely the experimental group and the control group. To determine the effectiveness of the LMS application on improving reading skills, a pre-test and a post-test were conducted in both groups. The initial test was carried out simultaneously in each group before the treatment of the LMS application in the lecture began. This first initial test aims to determine the initial ability of the students in each group. After the treatment of the LMS application in the lecture, a final test is held to measure the students' final abilities.

The subjects of this study were students of the German Language Education Department at the Faculty of Languages and Arts at UNIMED semester 2 who contracted Lesen A2 courses from classes A and B. From the two classes, a draw was made to determine which was the control group and which was the experimental group. The class that was chosen to be the experimental group was class B, while the class that was chosen to be the control group was class A. The instrument used to collect the data needed in this study was a German reading comprehension test in the form of an objective test. The test is in the form of a reading comprehension test with a certain theme with a level of difficulty equivalent to level A2 (basic ability level 2), which refers to the *der Gemeinsame Europäische Referenzrahmen (GER)*, which is a general frame of reference applied in European countries as a basis for developing learning language. The test is in the form of a set of questions that measure students' ability to understand the content of the text. This test consists of 10 questions in the form of a true-false objective test and five questions in the form of multiple choice.

After the data from each group is collected, then a series of statistical tests are carried out in order to measure effectiveness. A series of statistical tests were carried out with the help of several computer software such as SPSS (Statistical Package for Social Science) and Microsoft Excel. The tests carried out include normality test and homogeneity test, which is one of the requirements in quantitative analysis. Then a t-test was conducted which aims to determine whether there is a difference in the average results of the initial and final tests between the experimental group and the control group. The t-test carried out in this study is an independent sample t-test, because this study involves comparing the mean values between two different groups, which are independent or unrelated to each other, and to see whether the differences are significant. occurred between the two groups occurred because of a treatment (Larson Hall, 2019: 241). After the difference between the experimental group and the control group is known, it is then seen which average value is greater to see which learning method is more effective by comparing the averages obtained by each group. In addition, a gain index is also sought to measure the increase that occurs before and after the learning takes place. This gain index is searched by using the normalized gain index formula from Meltzer (2020: 3).

IV. Discussion

In developing e-learning using LMS Moodle with Campus theme. The procedure for using and registering for e-learning for students is as follows:

1. Students can access the e-learning website by using a browser on their laptop/mobile.
2. Student account registration is done independently (email-based self-registered), namely students register by clicking the create account button and filling out the registration form provided. To activate an account that has been registered, students can activate it via personal email.
3. Furthermore, users can login to the e-learning website. Students who already have an account become e-learning users and have a role as registered users (authentic users).
4. Every student who is able to login and is registered can register independently in the subjects taken after getting the password given by the lecturer or administrator.
5. Students can access learning materials and participate in learning activities.

For lecturer users, the registration procedure and its use are as follows:

1. Lecturers can access the e-learning site by using a browser on a laptop/cell phone.
2. Lecturer account registration is done independently (email-based self-registered), namely the lecturer registers by clicking the create account button and filling out the registration form provided. To activate an account that has been registered, the lecturer can activate it via personal email.
3. Then the user can login to the e-learning site. Lecturers whose accounts have been registered as e-learning users will have the role of registered users (authentic users).
4. After the lecturer has an account, the administrator will change the role of the lecturer as a teacher, so that the lecturer can have access rights to manage subjects freely such as creating, registering, and managing the subjects being taught.
5. Lecturers go to the e-learning website, then register themselves independently in the subjects being taught by choosing a role as a teacher.

The composition of the subject matter is arranged and classified based on the theme after which it is regrouped based on the order of the material. All learning materials for A2 level reading skills are found on the e-learning website with a topic structure. Each lecturer has full access rights to learning reading skills at A2 level, such as designing materials, registering students to enter learning, changing learning registration codes, or placing learning content and activities on learning topics. In addition to the subject page, e-learning also has an announcement page, a question and answer forum for discussions related to the e-learning used and a lecturer performance assessment page. There are several features to improve the learning materials available on the learning topics page as follows:

1. Page feature (One Page) is a feature of learning materials in the form of internet pages that can be managed by lecturers to put various teaching materials such as text, images, URLs, and videos on a web page.
2. Book Features. This component is designed to display learning materials on several different pages accompanied by a table of contents that serves to navigate for the reader. The material that can be presented in the book feature is not only limited to text, but can also add photos, videos, and URLs from other sites. The difference between feature books and feature pages is the number of pages along with the table of contents.
3. Files feature. The document or file feature is used by lecturers to upload teaching materials in the form of files, and these files can be downloaded and used by students as learning resources for subjects. There are various types of files that can be uploaded such as text files (.doc/docx, .txt, .ppt, .pdf), audio (.mp3), video (.flv, SCORM, .mp4), animation (.swf), images (.gif, .jpg, .png) and other files supported by Moodle.
4. Features labels. This feature is used to write or display teaching materials directly on the course page. Views can be short notes, images, audio and video, and a site URL.

5. URL feature. The URL feature is used to enter a website address on the subject page so that students can open a learning reference from an external website page. The learning activity features found on the learning materials page are as follows:
 1. Forums. This feature is used for dialogue between lecturers and students or between students on a website page. Each student can ask questions, respond to messages, reply to messages or respond to a discussion by typing in the text editor section.
 2. Chat. This feature is used to send messages between lecturers and students or between students directly (realtime). So with this module it can make it easier for more interactive communication or discussion.
 3. Assignment (Task). This feature is used by lecturers to give assignments to students. In this module, students can collect assignments through the e-learning website and there are clear working features and boundaries, so that it can make it easier for lecturers to record every task that has been done by students. In this feature there are 2 (two) options, namely online submission (doing assignments directly through the e-learning website) and file submission (submission/uploading task files).
 4. Quiz. This feature is applied by lecturers to give quizzes with a variety of questions and provide questions for students with complex instructions, as well as provide feedback and assessments for students via the e-learning website. Apart from lecturers, it is easier for lecturers to manage quizzes such as protecting quizzes with passwords, managing quiz presentation times, time limits for processing, grace periods for repetition of questions and delivery of questions either sequentially or randomly.
 5. Survey. This feature contains a confirmed instrument for the assessment of the online learning process. Lecturers cannot change the content of the existing instrument, because this module has been adapted to collect data from students related to the online learning zone and the progress of their understanding in the given learning method.
 6. Feedback and Questionnaire. This feature can be used by lecturers to create a questionnaire of various questions to get feedback from students. The instrument in this feature consists of several choices of types of questions. The difference between this feature and the quiz feature lies in its purpose. This feature serves to collect data, while quizzes are used to test and assess students.

In addition to the various facilities above that can be used by lecturers. There are still features that can make it easier for lecturers to save their personal files in the private files feature. This feature makes it easier for lecturers to store and protect personal data on the server, makes it easier for users to access it with various electronic devices, and is easy and practical when distributed to students, can cut paper usage and storage of printed documents. The developed e-learning website can also be obtained via a smartphone with a browser application and a moodle mobile application that can be obtained from the Playstore (for Android users) and Appstore (for iPhone users). With this application, students and lecturers can send and check assignments, read teaching materials, download material files, write or reply to discussions on forums, send messages using the chat feature using a simple display, fill out polls and carry out online exams.

The experimental group in this study is a class that uses the Learning Management System (LMS) application in its learning, in which there are various virtual lecture activities that have been designed in such a way as to train their ability to understand German reading. These online learning activities are in the form of discussion forums, filling out word lists, searching through the internet, and reading comprehension exercises which are all done online. The initial ability of the experimental group students was in the sufficient category. This is indicated by obtaining an average initial test score of 7.1. After being given learning

treatment with the LMS application and a final test, the average score increased to 8.2. The results of this final test indicate that the reading ability of the experimental group students has increased to be in the good category.

The control group is a class that only uses conventional learning in the classroom as usual. In this Lesen II lecture, learning in the control group is carried out as usual according to the syllabus and lecture program unit (SAP) that has been designed by the lecturer. In general, learning in the control group uses a learner-oriented approach (student centered). Unlike the experimental group, all activities in the control group were carried out in a classroom without applying the LMS application. From a series of pre-test and post-test, the average score for the initial test was 6.8 and the average score for the final test was 7.5. Even though there was an increase in the class average score, the students' reading ability in the control group was still in the sufficient range. From the description above, it can be observed that each of the initial and final tests given to the experimental group and the control group produced various results. After being given learning treatment in each group and measured through a final test, it appears that in both groups there is an increase in reading ability. Although both groups experienced an increase, it should also be noted that at the time of this final test the average score of the experimental group seemed much better than the control group. This indicates that between the two groups there is now a fairly large difference in ability, where the ability of the experimental group after experiencing LMS learning has increased which is quite encouraging.

From the description above, it can be seen clearly that there are indeed differences in reading ability between the experimental group and the control group. However, to test whether there really is a significant difference between the experimental group and the control group, it is necessary to test the mean difference, or commonly known as the t-test. This t test aims to compare the average value of the test results between the experimental group and the control group. This t-test was conducted to measure whether the average value of the two groups had a difference or not, and the difference that occurred was the effect of the existence of a treatment.

Before the t-test is carried out, the analysis requirements test is first performed, which includes the data normality test and the data homogeneity test. The results of the two tests prove that the data held by the experimental group and the control group has a normal distribution and homogeneous variance. Thus, these data have met the requirements for further analysis, namely to look for differences between the experimental group and the control group by conducting a t-test.

The calculation of the t test with the help of SPSS 16.0 software produces a data significance value of 0.178 which is greater than 0.05. Thus, it can be concluded that at the 5% significance level there is no difference in reading ability between the experimental group and the control group at the time of the initial test. These results prove that the experimental group and control group students at the time of the initial test had the same ability in reading. In other words, before being given learning treatment, both conventional and applying LMS, students in both groups had the same initial ability in reading skills. In the t-test of the final test results obtained a significance value of 0.018 which is smaller than 0.05. This means that at the 5% level of significance there is a difference in reading ability between the experimental group students and the control group at the time of the final test. Thus, it can be concluded that after being given learning treatment, especially the application of LMS in the experimental group, there is now a significant difference between the experimental group and the control group in terms of reading ability.

From the description of the results of the t-test calculation on the final test above, it can be concluded that between the experimental group and the control group there is a significant difference in reading ability. Thus the null hypothesis (H_0) which reads "there is no significant difference in the ability to read German between students who study using LMS and students who study conventionally" is rejected, on the contrary the alternative hypothesis (H_1) is accepted and concluded that "there is a significant difference There is a significant difference between the German reading ability of students who use LMS and students who use conventional learning methods". After it was proven that there was a difference in reading ability between the experimental group and the control group, the next step was to find out whether or not the LMS application was effective in improving students' reading skills in German. For this reason, it is necessary to compare the average between the experimental group and the control group. In this average comparison test, if the experimental group has a higher gain score, it can be concluded that learning with the LMS application is more effective, on the contrary if the control group has a higher gain score, it means that conventional learning is more effective.

From the data obtained through the pre-test and post-test, it appears that the experimental group obtained a gain score of 1.1, while the control group was 0.7. It appears that the gain score of the experimental group is greater than the gain score of the control group, which means that learning with the LMS application is effective. After knowing that the gain score achieved by the experimental group was higher than the control group, as well as proving that the learning treatment applied in the experimental group, namely LMS, was more effective than conventional learning, the next step was to search for the gain index achieved by the experimental group. The search for this gain index aims to measure the increase that occurs before and after the learning treatment, so that it can be interpreted how much the effectiveness of the learning being tested is. After calculating the gain index search obtained by the experimental group, the gain index value is 0.39. The gain index value of 0.39 is in the medium category. Thus, it can be concluded that the application of LMS in improving the ability to read German has an effectiveness in the medium category.

Based on the description above, it can be concluded that compared to conventional learning, learning with the application of the LMS application is proven to be more effective in improving students' abilities in German reading skills with the effectiveness strength being in the medium category. This is not only proven by the significant difference between the final test results achieved by the experimental group and the control group, but also by the higher gain scores from the initial test to the final test by the experimental group than the control group.

Online learning, in this case the application of LMS in learning, has been successful in helping to improve students' reading comprehension skills A2 in German. This is proven in this study, where the learning outcomes of students who were given online learning treatment were superior to those who studied conventionally. The initial ability of the experimental group students before being given online learning was relatively the same, even lower, than the ability of the control group students who studied conventionally, but the situation was reversed after online learning was applied, where the experimental group student learning outcomes became much better than the experimental group. control.

These results can be said to be reasonable considering how many advantages are offered by LMS in managing learning so that learning objectives can be achieved. One of the main characteristics of online learning or e-learning that conventional learning does not have in the classroom is flexibility, where learning can be done anytime and anywhere. With this

learning character, students can take part in learning without being limited by space and time. When space and time are no longer an obstacle, a person can take part in learning anytime and anywhere according to his wishes. Thus, the application of the LMS application in learning allows students to freely determine the most appropriate and most comfortable time and place for them to take part in learning, so that when they take part in the learning, the students are in their best condition in learning. With these good conditions, all information and learning materials can be conveyed more effectively, because students are really physically and mentally ready to learn.

V. Conclusion

There was an increase in reading ability of the experimental group and control group students. The experimental group's initial reading ability was in the sufficient category, and after being given learning treatment with the LMS application, the experimental group's students' reading ability increased to good. While the ability of the control group students remained in the sufficient category. Based on the analysis of the data held by the experimental group and the control group, there is a significant difference between the reading ability of students who study in class with the LMS application and the reading ability of students who study in conventional learning; and based on the gain scores obtained by the experimental group and the control group, it is proven that learning using the LMS application is more effective than conventional learning in improving students' reading comprehension skills in German.

Considering that this research produces something positive in improving the quality of learning, it is recommended for educational institutions, in this case the Department of German Language Education, to start designing alternative forms of learning other than conventional forms of learning. One of them is a form of learning that utilizes technology such as online learning. For this reason, in addition to providing supporting infrastructure, training is also needed for teachers to be more open and accustomed to using internet technology in learning. In addition, it should also be noted that online learning, in this case the LMS application, should not only be understood as an activity of transferring teaching materials from books to an internet server for students to access. In developing online learning, in addition to good planning and sufficient internet knowledge, teachers also need more patience in guiding and directing students so that they are accustomed to an online learning environment that demands independence.

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