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The Chemistry Teacher Activities on The Training of Project Based Learning Teaching Materials Digitalisation

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Abstract

This activity is the second year of community service which is a continuation of training activities and making digital teaching materials to support project-based learning (PjBL) in sekolah penggerak for chemistry teachers in Padang city. This second year of community service activities has the theme of training to digitise project-based learning teaching materials developed at the Chemistry Musyawarah Guru Mata Pelajaran (MGMP) in Padang city. This activity aims to provide direction to Padang city chemistry teachers in implementing digital teaching materials. This community service was carried out in the lecture building of FMIPA Universitas Negeri Padang on 9 August, 16 August, and 23 August 2024. The implementation methods carried out in this community service activity are: (1) conducting a needs analysis, knowing the situation of teachers towards the implementation of PjBL-based learning through questionnaires distributed, (2) delivering material to community service participants related to PjBL and an overview of teaching materials that have been designed using the PjBL learning model explained by the speaker, then (3) delivery of materials and discussions related to differentiated learning with the PJBl learning model, and (4) delivering material related to the digitalisation of project-based teaching materials or PjBL using liveworksheet. The results of the service activities carried out can provide motivation, provide experience, and understanding for Padang city chemistry teachers regarding the digitalisation of project-based learning teaching materials so that chemistry teachers in Padang city can prepare digital chemistry teaching materials, especially with liveworksheets using the PjBL model that can assist learning activities so that learning can run effectively and efficiently in accordance with the demands of the curriculum and the times.

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INTRODUCTION

The rapid development of the times creates technology that is increasingly advanced and has an influence on every aspect of life. The relationship between education and revolution 4.0 is inseparable from the development of information and communication technology, one of which is a tool to accelerate learning in the field of education (Prasasti & Dewi, 2020). Rapidly developing technology such as the internet, greatly helps teachers in developing an electronic-based teaching material. Based on research conducted by Ba'alwi (2015) on the effect of internet usage on class X student learning outcomes, it was found that there was a positive and significant relationship between internet usage and student learning outcomes. Therefore, the ability of teachers is important in the preparation of teaching materials to be more interesting, especially teaching materials that utilise technology. Utilising technological developments in

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making teaching materials is a teacher's biggest contribution in achieving success in the learning process so that these activities are a must for a teacher (Hariyati & Racmadyanti, 2022).

Learning tools, such as teaching materials, are needed in learning activities at school because learning activities are not only in the form of providing material and assignments by a teacher, but learning in accordance with the curriculum requires forming IT-enabled learning, creative, cooperative, critical thinking, character, and literacy. The learning process also requires students to learn not to depend on others and learn actively so that they are able to gain knowledge independently. Therefore, teachers as educators are tasked with creating and compiling teaching materials based on the surrounding environment and the characteristics of students so that the learning process can achieve the goals to be achieved (Hariyati & Racmadyanti, 2022).

The design of teaching materials and activities used by a teacher determines the quality of learning so that to obtain new and quality learning experiences digital teaching materials can help students achieve this (Shelviana et al., 2023). This is in accordance with the definition that teaching material is a term to describe learning resources used by teachers where learning resources are arranged concisely and systematically so as to support and achieve the success of students in learning activities (Asrizal et al., 2017). Teaching materials can be developed and produced systematically with printed media or online. As for one of the teaching materials that can complement activities in learning, namely teaching materials in the form of student worksheets (LKPD) because with LKPD students can be more enthusiastic in the learning process (Shelviana et al., 2023).

LKPD is teaching material that contains a series of questions and contains important information which is then arranged systematically to help students get creative ideas (Aditama et al., 2019). One of the teaching materials that can be developed digitally is electronic student worksheets (e-LKPD), digital-based learning media or e-LKPD can be accessed via laptops and smartphones in which there are materials, images, videos, and questions that can be accessed and answered by students (Zahroh & Yuliani, 2021). In developing e-LKPD using digital-based online media, one of them is using liveworksheet. Liveworksheet is a free application provided by Google which can be used in working on student worksheets, with this application traditional worksheets can be interactive and able to correct mistakes online (Lioba et al, 2021). The advantages of this application are interactive and can motivate students, as well as save time and paper sheets for teachers (Andriyani et al., 2020). The worksheet can be accessed and done online by students where students can send answers directly online to the teacher (Shelviana et al., 2023).

Based on the results of distributing questionnaires given to chemistry teachers in Padang city, it was found that most chemistry teachers in Padang city were not familiar with liveworksheet and differentiated learning with PjBL learning model. The PjBL learning model is a learning method that is centred on students and facilitated by teachers, where PjBL is an important tactic in developing students, students solve problems, plan, arrange experiments, solve questions, draw conclusions, report their findings, and apply this knowledge to real daily life under a learning environment that is created so that students develop and gain meaningful work experience (Kurniawati ddk, 2020). For this reason, the use of teaching materials using liveworksheet can help students achieve competence in accordance with the material studied, especially project-based teaching materials.

The development of LKPD using liveworksheet provides convenience in the learning process, the development of LKPD using liveworksheet intends to provide efforts in improving the quality of schools by following technological developments (Shelviana et al., 2023). This is also supported by research conducted by Prabowo (2021) regarding the use of liveworksheet

which can improve student learning outcomes. Research by Fepiana & Salamah (2022) concluded that there was an increase in learning activeness and independence through liveworksheet learning media for students. Therefore, this community service with the theme of training to digitalise project-based learning teaching materials in the chemistry Musyawarah Guru Mata Pelajaran (MGMP) of Padang city is carried out to overcome these problems.

Based on the results of the questionnaire distributed to participants in the service activities carried out, activity participants felt that this service activity was very useful for chemistry teachers in Padang city to digitise PjBL teaching materials in accordance with the demands of the Kurikulum Merdeka and the times. In this activity, chemistry teachers who are members of MGMP are not only given theoretical knowledge, but also discuss each other related to learning with the PjBL model, differentiated learning with the PjBL learning model, and are given training to digitise teaching materials using liveworksheet. It is hoped that this community service with the theme "Training the Digitalisation of Project Based Learning Teaching Materials on Chemistry Teachers in Padang" can have a better impact on the learning process in schools and provide experience and understanding of the digitalisation of project-based learning teaching materials for each participant who participates in this service activity.

METHOD

This community service activity is a continuation of community service activities in the previous year, namely in 2023 where activities have been carried out with the theme of training and development of digital teaching materials to support project-based learning in driving schools for Padang city chemistry MP teachers where this first year activity aims to provide experience for Padang city chemistry teachers in developing teaching materials used in driving schools using the project-based learning (PjBL) learning model. While in the second year it aims to provide training to Padang city chemistry teachers in digitising LKPD teaching materials that use liveworksheet with a project-based learning model to improve the teaching materials that have been developed so that Padang city chemistry teachers can take advantage of technology and can facilitate the learning process at school. Activities are carried out in the form of training through lecture methods by resource persons with direct discussion methods to community service participants.

This community service activity was carried out for 3 meetings, starting from 9 August, 16 August, and 23 August 2024 which took place in the lecture building FMIPA Padang State University. This community service activity was carried out simultaneously with all Padang city chemistry teacher participants who were members of the Padang city chemistry MGMP. The number of participants who participated in this activity on the first day was 52 participants, the second day was 49 participants, and the third day was 34 participants.

The mechanism for implementing the service begins with the presentation of material by the resource person, presentation of examples of teaching materials that have been prepared using the project-based learning (PjBL) model, delivery of material and discussions related to differentiated learning, and delivery of material related to the digitalisation of project-based teaching materials using liveworksheet. In this service activity, an evaluation of activities is also carried out which aims to see how the strengths and weaknesses of the activities carried out. The measuring instrument used to determine the understanding and needs of the training conducted is a questionnaire. The questionnaire distributed to chemistry teachers contains an understanding of liveworksheet, the implementation of differentiated learning, the level of usefulness of the activity, and future needs.

RESULTS AND DISCUSSION

This activity aims to help solve the problems currently faced by chemistry teachers, especially chemistry teachers in Padang city. This community service activity is themed training to digitalise project-based learning teaching materials in the chemistry MGMP of Padang city. Through the activities carried out, teachers can gain new knowledge about the digitalisation of existing teaching materials where this knowledge is obtained through the speaker's explanation of PjBL teaching materials, examples of teaching materials prepared using PjBL, differentiated PjBL teaching materials, and how to digitise the developed teaching materials.

This community service implementation activity was carried out by a community service team with the service implementer, Okta Suryani, S.Pd., M.Sc., Ph.D together with team members Trisna Kumala Sari, M.Si., Ph.D and Dr. Riga, S.Pd., M.Si, and assisted by several chemistry students FMIPA UNP. The students who participated in this service activity were Aglin Velly, Nafisah Yulia Rahmad, Nurul Natasya, Haris Prayudha Setyawan, Rismi Verawati, Lailatul Rahmi, Eka Putri Katonnia, Deani Dwi Rahma Doni, and M. Arvito Ramadhan. This activity was carried out for three meetings with each meeting there was a presentation of material by presenters who came from Universitas Negeri Padang (UNP) chemistry lecturers. The resource persons as presenters in the service activities carried out were Prof. Dr. Mawardi, M.Si, Faizah Qurrata Aini, M.Pd, and Nofri Yuhelman, S.Pd., M.Pd.

The activity which was held at the first meeting on 9 August 2024 was also officially opened by the community service team as well as remarks from the head of the community service implementer, namely Mrs. Okta Suryani, S.Pd., M.Sc., Ph.D. Furthermore, remarks from the chairman of the research and community service institution (LP2M) of Universitas Negeri Padang by Prof. Dr. Mawardi, M.Si, and remarks from the chairman of the Padang city chemistry MGMP by Mrs. Dewi Surya Indravita, S.Pd., M.Si. The following is documentation of the first meeting of community service activities with the Padang city chemistry MGMP as shown in Figure 1 below.

Figure 1. The 1st meeting: Project-based learning (PjBL) workshop and overview of teaching materials that have been designed using the PjBL model.

At the first meeting, the material delivery activity regarding the PjBL learning model was delivered by Mr Prof. Dr. Mawardi, M.Si. The material presented at the first meeting in this service activity included the learning process in accordance with the demands of the Kurikulum Merdeka, specifically by implementing learning using the PjBL model. The presentation of material outlines learning with PjBL and the presentation of teaching materials in the form of LKPD that have been prepared in accordance with community service in the activity of making teaching materials with the PjBL model carried out in the previous year.

The second meeting of community service activities was held on 16 August 2024 which was attended by 49 participants from chemistry teachers who are members of the chemistry MGMP in Padang city. This activity was carried out in the form of delivering the second material by Mrs Faizah Qurrata Aini, M.Pd regarding differentiated learning. in the implementation of this activity, the presentation of material related to differentiated learning in the PjBL model, where the speaker delivered the material and continued with a joint discussion between the participants and the speaker regarding how differentiated learning, what can be applied, and how activities have been carried out during the learning process at school related to differentiated learning. The following is documentation of the second meeting of community service activities with the Padang city chemistry MGMP as shown in Figure 2 below.

Figure 2. Differentiated Learning Workshop

Activities at the third meeting on 23 August 2024 were closed by providing material related to the digitalisation of PjBL teaching materials that had been developed, especially digitalisation using liveworksheet by Mr. Nofri Yuhelman, S.Pd., M.Pd. This activity helps participants to digitise existing teaching materials using liveworksheet which can create learning activities more effectively and efficiently using digital. In this presentation, it is hoped that participants can directly apply the use of digital teaching materials, especially using the liveworksheet application which can be useful to help teachers and students in the learning process. The following is documentation of the third meeting which is the presentation of material at the third meeting in Figure 3 below.

Figure 3. Workshop on digitisation of Teaching Materials with Liveworksheet

Based on the questionnaire distributed at first the teacher stated that he did not know what a liveworksheet was, and differentiated learning with the PjBl learning model. after this community service was carried out, it was found that this activity was very useful for chemistry teachers in Padang city who were members of the Padang city chemistry MGMP. The results of the community service activities carried out can provide motivation, provide experience, and understanding for Padang city chemistry teachers regarding the digitalisation of project-based learning teaching materials so that chemistry teachers in Padang city can compile digital chemistry teaching materials, especially with liveworksheets using the PjBL model which can assist learning activities so that learning can run effectively and efficiently in accordance with the demands of the curriculum and the times.

In line with the objectives of the community service carried out, some of these studies can strengthen the objectives of the service where research conducted by Prabowo (2021) regarding the use of liveworksheets that can improve student learning outcomes. Research by Fepiana & Salamah (2022) concluded that there was an increase in activeness and independence of learning through liveworksheet learning media for students. Nuzula & Putranto (2023) which is a study that looks at whether or not there is an influence in the application of LKPD based on liveworksheet websites, where the results show that there is an effect of the application of LKPD learning media assisted by liveworksheet websites on student learning responses and learning outcomes. Further research by Avivi et al (2023) on the implementation of differentiated learning with the PjBL model in class X high school students in its application, one of the media used in the form of liveworksheet has a positive impact on students and teachers where the learning carried out goes according to plan and produces a pleasant learning atmosphere and students are free to express their potential according to their interests so that learning is felt to be more meaningful. Therefore, with this service, it has a positive impact on learning activities in schools, especially in chemistry materials designed by chemistry teachers in Padang city, especially by digitising LKPD teaching materials with a PjBL learning model that is digitised with the help of liveworksheet, increasing further understanding of the benefits of using project-based learning or PjBL in learning, and how differentiated learning with the PjBL model.

CONCLUSION

Based on the questionnaire distributed, it was found that this activity was very beneficial for chemistry teachers in Padang city who are members of the Padang city chemistry MGMP. The results of the service activities carried out can provide motivation, provide experience, and understanding for Padang city chemistry teachers regarding the digitalisation of project-based learning teaching materials so that chemistry teachers in Padang city can compile digital chemistry teaching materials, especially with liveworksheets using the PjBL model that can assist learning activities so that learning can run effectively and efficiently in accordance with the demands of the curriculum and the times.

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