B-ICON Proceeding

Proceeding Paper

THE BREASTFEEDING CLASS WEBSITE: AN INITIAL TESTING OF WEB-BASED LEARNING MANAGEMENT SYSTEM

Diki Retno Yuliani*, Fajaria Nur Aini, Riza Amalia

Department of Midwifery, Poltekkes Kemenkes Semarang, Semarang, Indonesia

*dikiretnoyuliani@gmail.com

Presented at the 4th Bengkulu International Conference on Health (B-ICON), Bengkulu-Indonesia, September 24-26th, 2024

Published: December 31st, 2024
Copyright © 2024 by authors.
ISSN: 2986-027X

Abstract

Breastfeeding success is a skill that needs to be taught during pregnancy. Information about breastfeeding can be provided by utilizing information technology, one of which is a website. This study aims to design a breastfeeding class website for educational media. The research design was research and development with a waterfall model that includes analysis, design, programming, testing, and maintenance. The website developed was a web-based. LMS (learning management system). Testing in this study was the 1st functional test. The instruments or substances displayed on the website include materials in the form of text, video, and posters as well as BSES-SF, IIFAS, and breastfeeding knowledge questionnaires. The results achieved was the formation of a web-Based LMS with the domain www.kelasmenyusui.com which can be accessed via laptop or PC and Android. The website menu included a home, material list, member list, and dashboard. The 1st stage of the breastfeeding class website functional testing stated that in general, the breastfeeding class website could function well, but there were still problems with the function when the website was accessed by many users at the same time. The results of this assessment will be the basis for future improvements so that the website can be utilized optimally.

Keywords : Website, Learning Management System, Breastfeeding Class, Initial Testing

INTRODUCTION

The achievement of exclusive breastfeeding targets in Indonesia in the last 5 years (2019-2023), namely 67.74% in 2019 (Kemenkes RI, 2020), 66.1% in 2020 (Kemenkes RI, 2021), 56.9% in 2021 (Kemenkes RI, 2022), 61.5% in 2022 (Kemenkes RI, 2023) and 63.9% in 2023 (Kemenkes RI, 2024). The achievement of exclusive breastfeeding in 2023 has started to increase but is still lower than the achievement 4-5 years ago. This is a problem that needs special attention.

Breast milk or breastfeeding has very diverse benefits, both for mothers and babies. Some of the benefits of breast milk for babies include breast milk is the right nutrition for babies and the best for babies, easy to digest, helps good growth for babies, protects against various infectious diseases, increases intelligence, coordination of sucking, swallowing, and breathing nerves more perfectly and helps the baby's psychomotor development faster. Meanwhile, some of the benefits of breast milk or

breastfeeding for mothers include breastfeeding can help restore the size of the uterus and body weight, prevent bleeding so as to reduce the incidence of anemia, space out pregnancies, be available anytime and anywhere and cost less, increase the bond of affection between mother and baby and reduce the risk of breast cancer and ovarian cancer (Yuliani et al., 2022). Given the benefits of breast milk and breastfeeding, the achievement of exclusive breastfeeding must be increased, to optimize the health of mothers and babies. Several studies have reported on the negative impacts of the practice of providing exclusive breastfeeding that is not optimal and providing early complementary foods. A study reported a relationship between early provision of MP-ASI and the nutritional status of infants aged 0-6 months in the working area of the Rowotengah Health Center, Jember Regency (Wargiana et al., 2013). Another study reported that the history of exclusive breastfeeding in stunted children was lower (31%) than in non-stunted children (66%) (Nuradhiani, 2020).

An effort is needed for mothers to be successful in breastfeeding their babies, namely by learning breastfeeding skills during the antenatal, intranatal, and postnatal periods (Prawirohardjo et al., 2016). In Indonesia, pregnant women are facilitated to attend pregnancy classes at least 4 times during pregnancy. One of the meetings in the pregnancy class discusses the material on caring for newborns for optimal growth and development, including exclusive breastfeeding (Kemenkes RI, 2014). Providing this material to pregnant women is expected to increase mothers' knowledge about breastfeeding, increase mothers' confidence in breastfeeding, and influence the success of breastfeeding. In the implementation of prenatal classes, there are groups of pregnant women who cannot access prenatal classes optimally, especially working mothers. A study reported that there is a relationship between work and the use of prenatal classes, working mothers are 3x more likely to not use prenatal classes compared to mothers who do not work (Yusmaharani et al., 2021). So it is necessary to find a solution so that all groups of pregnant women can access prenatal classes properly. The dissemination of information is currently very easy by utilizing information technology. Information technology was created to make it easier for users to do their work, to solve problems faced by users, and to open creativity, effectiveness, and efficiency in doing work. With the development of the current era, the role of information technology is very important, where we as users can utilize information technology with just one click (Karim et al., 2020). The use of online media in health education has several advantages, including the rapid dissemination of information and the form of content presented such as text, photos, audio, and video. In addition, online media users can interact with each other from anywhere and at any time (Sembada et al., 2022).

Websites in the digital era are one of the information media and means of promotion. Website-based application can be accessed via a web browser when connected to an internet or intranet network, this application is also software that uses a programming language (Komalasari et al., 2023). Information

about breastfeeding preparation can also be delivered to pregnant women through website applications, making it more effective and efficient, also can be accessed anytime and anywhere. Previous research reported that application-based educational interventions are educational interventions that have been proven effective in improving mothers' breastfeeding abilities (Surtania et al., 2023).

Exclusive breastfeeding or breastfeeding promotion media has been available in various forms, but there is no special website that discusses the theme in detail, completely, and can be accessed openly. An innovation in breastfeeding promotion media is needed to increase the scope of exclusive breastfeeding. Based on this background, researchers will build a breastfeeding class website as one of the educational media.

MATERIALS AND METHODS

The research design was research and development with a waterfall model that includes analysis, design, implementation (programming), testing, and maintenance (Wayan, 2021). The website developed was a Web-based learning management system (LMS). The analysis stage takes into account the achievement of exclusive breastfeeding and the use of information technology in education. The design stage was to create a web-based LMS design, the website looks or interfaces, and menu display at each meeting. The implementation stage was programming the LMS for the website.

The testing stages include (1) function or functionality testing, (2) testing the perception of ease of use and perception of usefulness, and (3) testing the effectiveness of using the breastfeeding class website on the knowledge, attitudes, and confidence of mothers to breastfeed. The functional test consists of 2 stages (a) the 1st stage of the website functional test will be carried out on the 3rd level of midwifery students who have passed the postpartum midwifery and breastfeeding care course, have gained experience in the clinic, and have sufficient experience related to the use of website-based LMS so they can provide an assessment of the website if used for pregnant or postpartum women, (b) the 2nd stage of the website functional test will be carried out on pregnant and postpartum women who are the real targets for using the breastfeeding class website. The 1st stage of functional testing uses open-ended questions about how the website functional so that respondents can provide reviews freely. Meanwhile, in the second stage of functional testing, the questions are in the form of a checklist consisting of the functionality of each menu or item on the website. This study was the 1st stage of the functional test to determine whether the website can run 100% well.

The suggestion from the results of the 1st stage of the functional test will be used as improvement material for the breastfeeding class website. Furthermore, the improved website will be used for the 2nd stage of the website functional test on pregnant or postpartum women in the community. Then, suggestions from the 2nd stage of the website functional test will be used for further website improvements. After passing the functional test stage, it will be continued with a test of perceived ease of use and perceived usefulness, also a test of the effectiveness of website use on mothers' knowledge, attitudes, and confidence in breastfeeding. If all stages of the functional test have been carried out with good results and improvements have been made to the website at each stage, then the breastfeeding class website will be suitable for use in the community.

The instruments or substances used in the website input include materials in the form of text, video, and posters as well as BSES-SF, IIFAS, and breastfeeding knowledge questionnaires. The Indonesian version of the BSES-SF has been proven valid and reliable for use in the population of pregnant women in Indonesia (Yuliani et al., 2023), while the Indonesian version of the IIFAS has been proven valid and reliable for assessing positive and negative perceptions of exclusive breastfeeding in mothers in Indonesia (Utami, 2016).

RESULTS AND DISCUSSION

The development of the breastfeeding class website began in March 2024 and is still ongoing to this day. The website that has been created is a Web-based Learning Management System (LMS), which can be accessed via Android devices or laptops at the link www.kelasmenyusui.com.

The materials or substances used in the breastfeeding class website are products used in previous research, including (1) Text material from the breastfeeding preparation class module compiled in 2021; (2) The breastfeeding preparation class videos (11 videos) compiled in 2022; (3) Posters prepared in 2024 together with the website, following the material in the module; and (4) The instruments include The Breastfeeding self-efficacy-short form (BSES-SF) in Indonesian (translated in 2023), Iowa Infant Feeding Attitude (IIFAS), and breastfeeding knowledge questionnaire (from the breastfeeding preparation class module, 2021).

On the breastfeeding class website there are 4 menus, namely (1) home; (2) material list; (3) register as a participant, and (4) dashboard. The home menu displays a brief explanation of why readers need to take a breastfeeding class and there is a follow class icon that will connect to the dashboard menu. The dashboard menu will direct participants to log in, and after logging in, each participant's account display will appear including participant profiles, registered courses, saved courses, quizzes, and reviews. The register to become a participant menu is data that must be filled in by participants before

taking a breastfeeding class, including name, email, and password data. After registering and logging in to the website, participants can start the pretest until the last meeting and posttest.

The breastfeeding class website scheme that has been prepared is as follows:

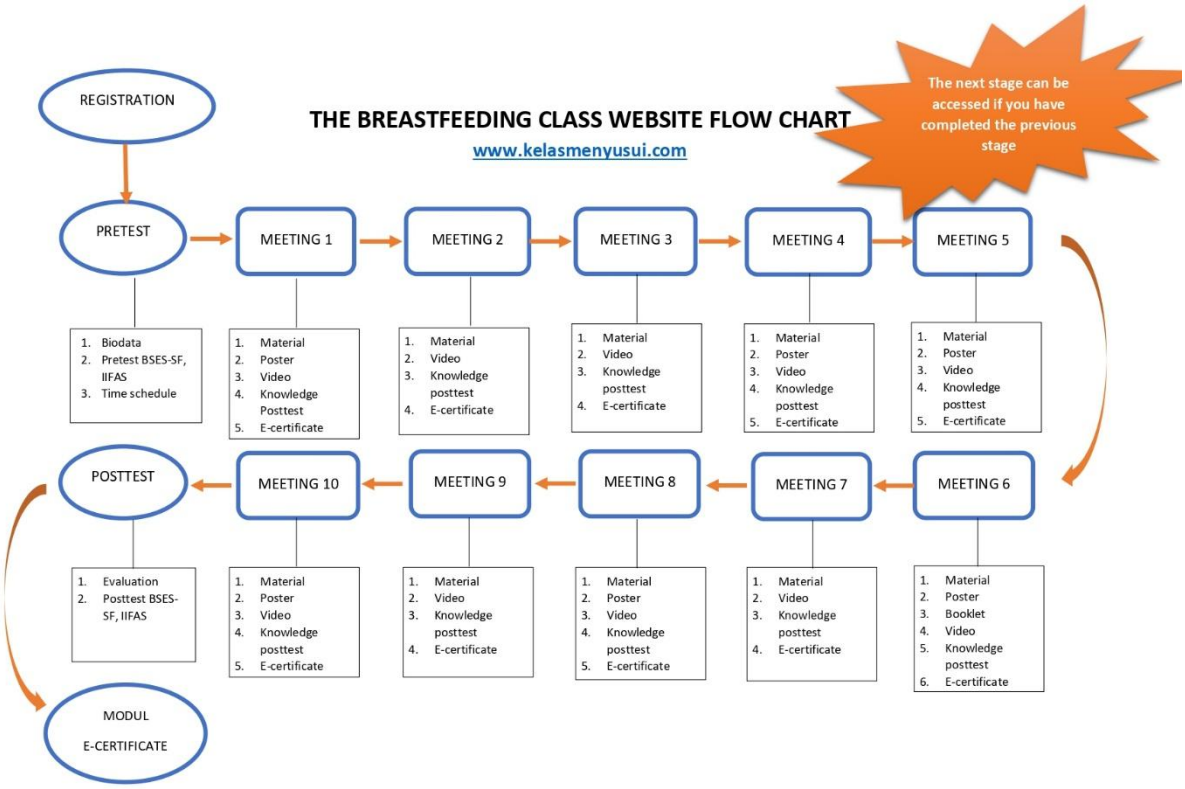


Figure 1: Flow chart of the breastfeeding class website

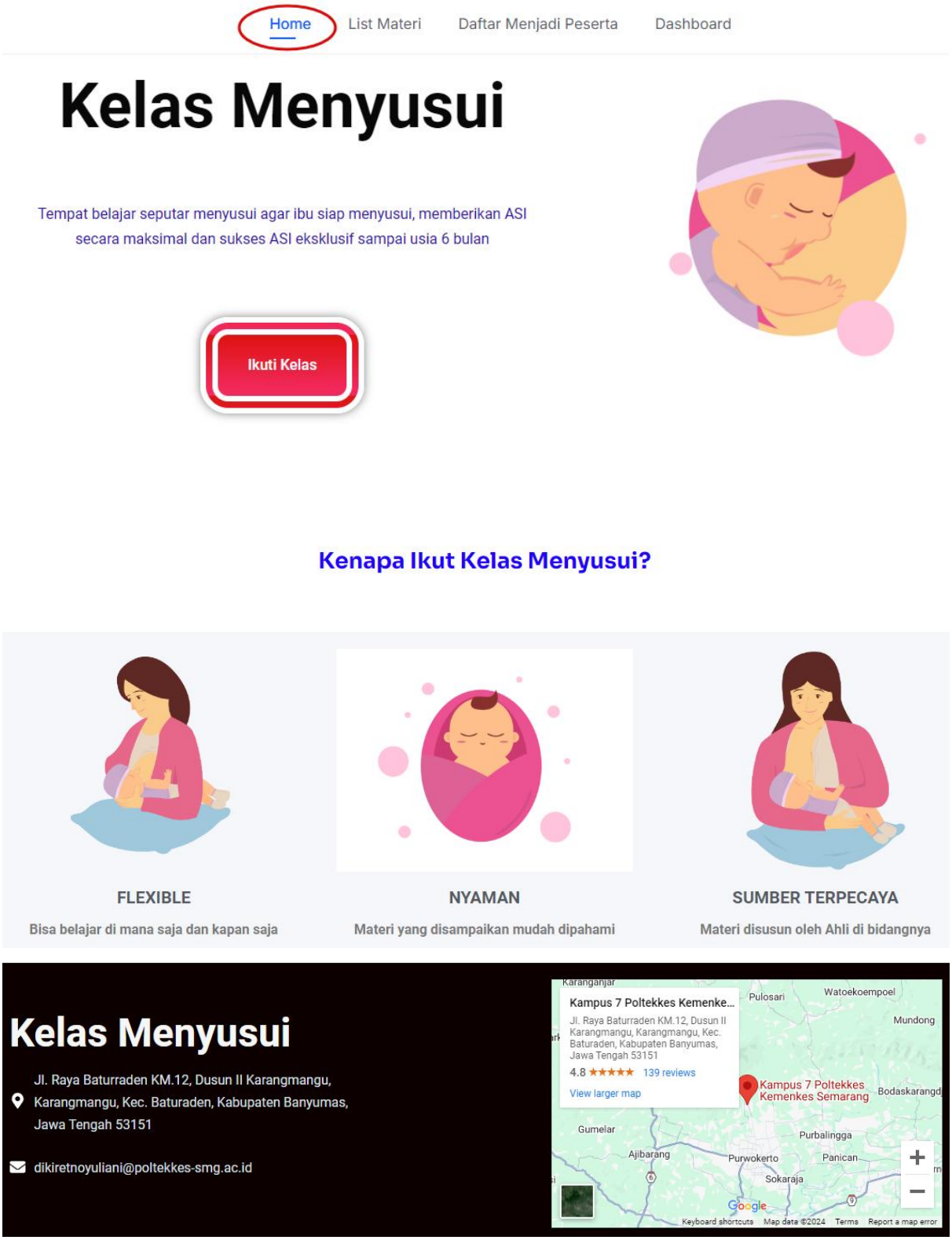


Figure 2: Home menu display before login to the breastfeeding class website

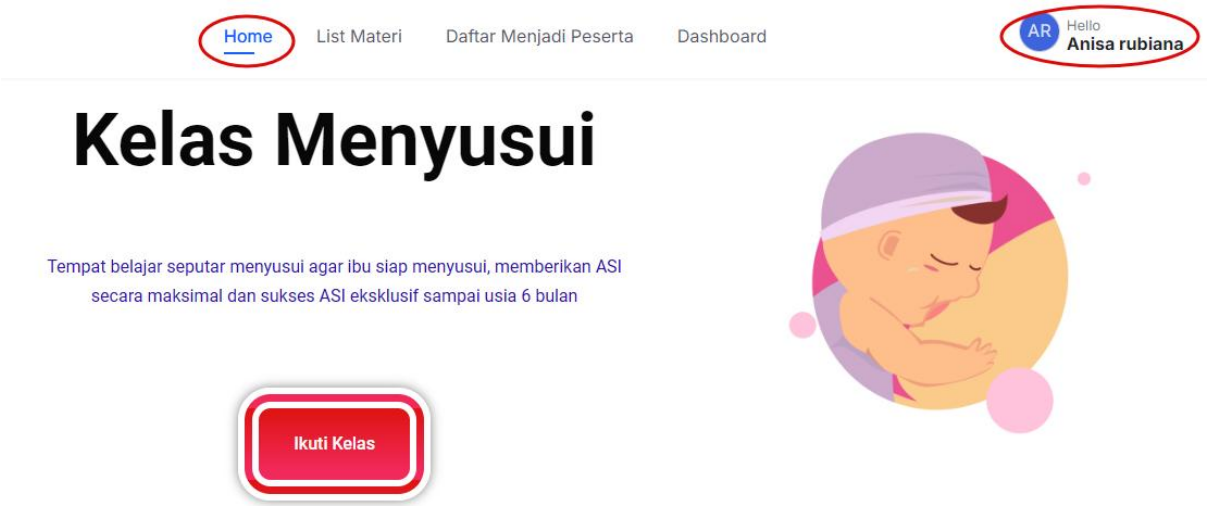


Figure 3: Home menu display after login to the breastfeeding class website

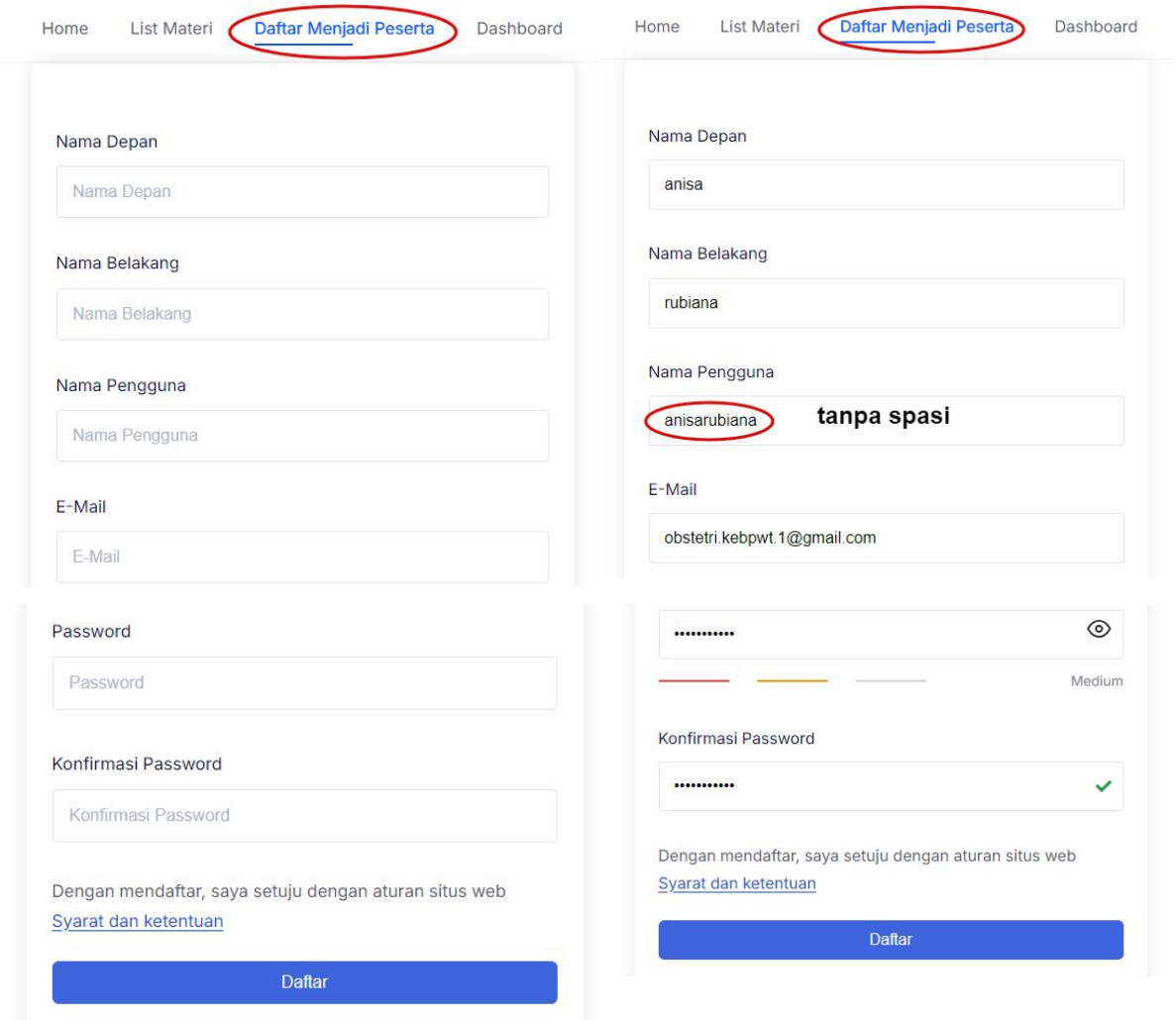


Figure 4: Register as a Participant menu display of the breastfeeding class website

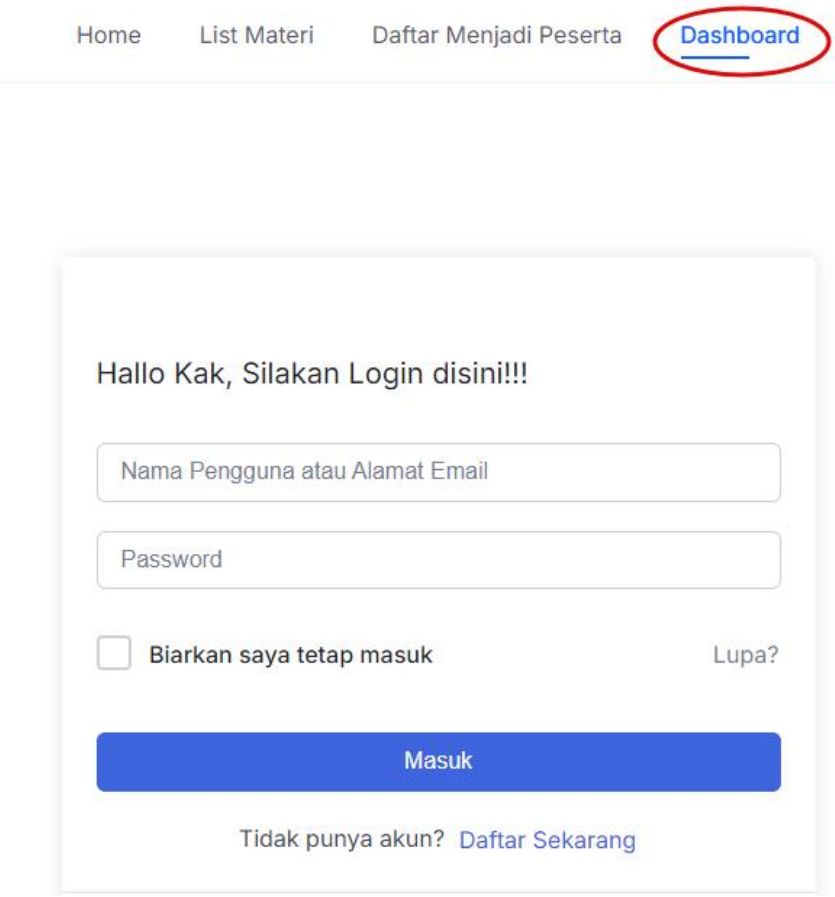


Figure 5: Dashboard menu display before login to the breastfeeding class website

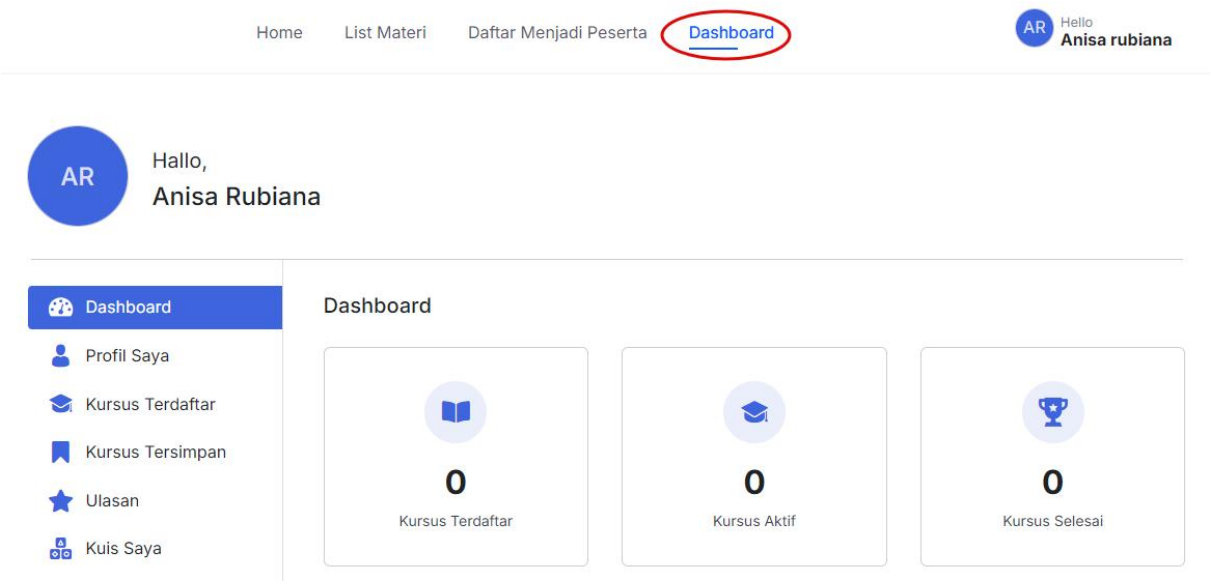
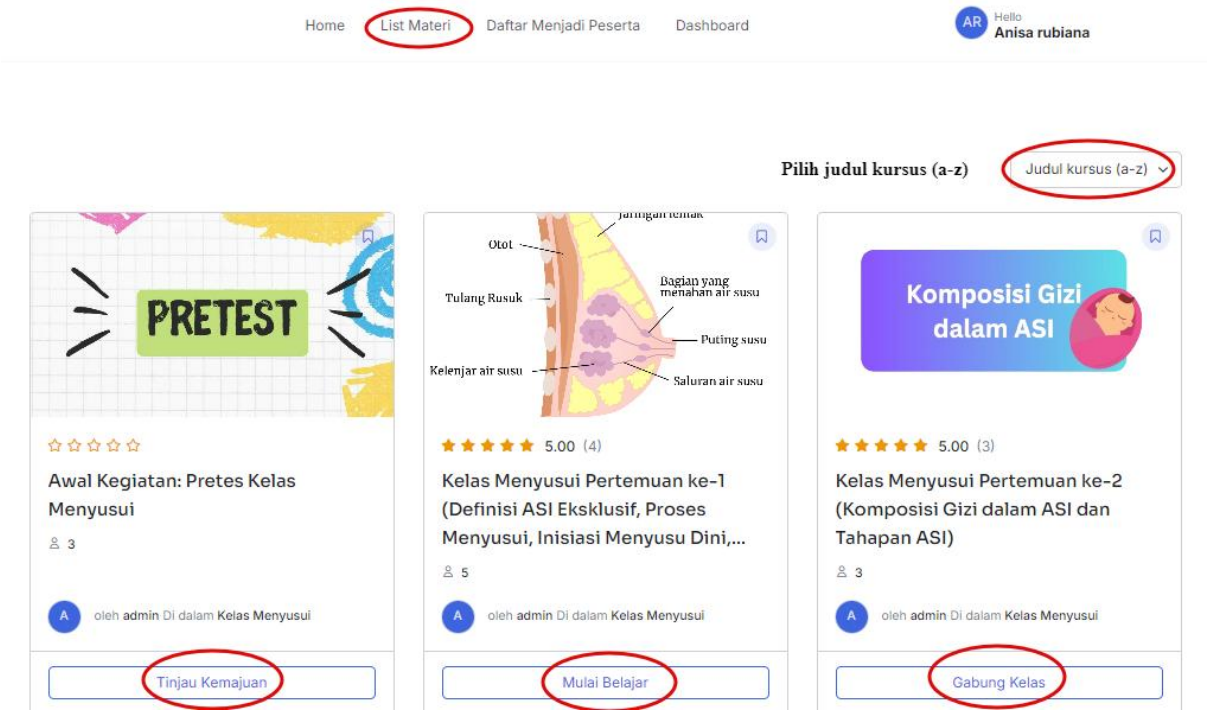


Figure 6: Dashboard menu display after login of breastfeeding class website

The material list menu consists of 13 stages or meetings, including the pretest (1 stage), meetings with breastfeeding-related materials (10 stages), posttest (1 stage), and e-certificate module (1 stage). The pretest meeting or stage contains BSES-SF, IIFAS, and participant biodata questionnaires that must be

completed first as a prerequisite for attending the 1st material meeting. In meetings with materials, each meeting contains materials and a posttest questionnaire on breastfeeding knowledge, which must be completed as a prerequisite for continuing learning at the next meeting. The material or substance is provided in 3 models, namely text, posters, and videos to make it easier for participants to understand the material on breastfeeding preparation. Meetings with material in the form of text and video include meetings 2, 3, 7 and 9. Meetings with material in the form of text, posters and videos include meetings 1, 4,5, 6, 8 and 10. Meeting 6 is also equipped with an oxytocin massage booklet. The breastfeeding knowledge questionnaire is an evaluation method in each meeting. The questionnaire can be tried several times. and there is a passing grade of 80% correct answers. The posttest meeting or stage contains the BSES-SF questionnaire, IIFAS, and activity evaluation. E-certificates are provided at each meeting and the end of the class, the e-certificate at each meeting contains the identity of the material at the meeting, while the e-certificate at the end of the class uses a general identity, namely the breastfeeding preparation class.



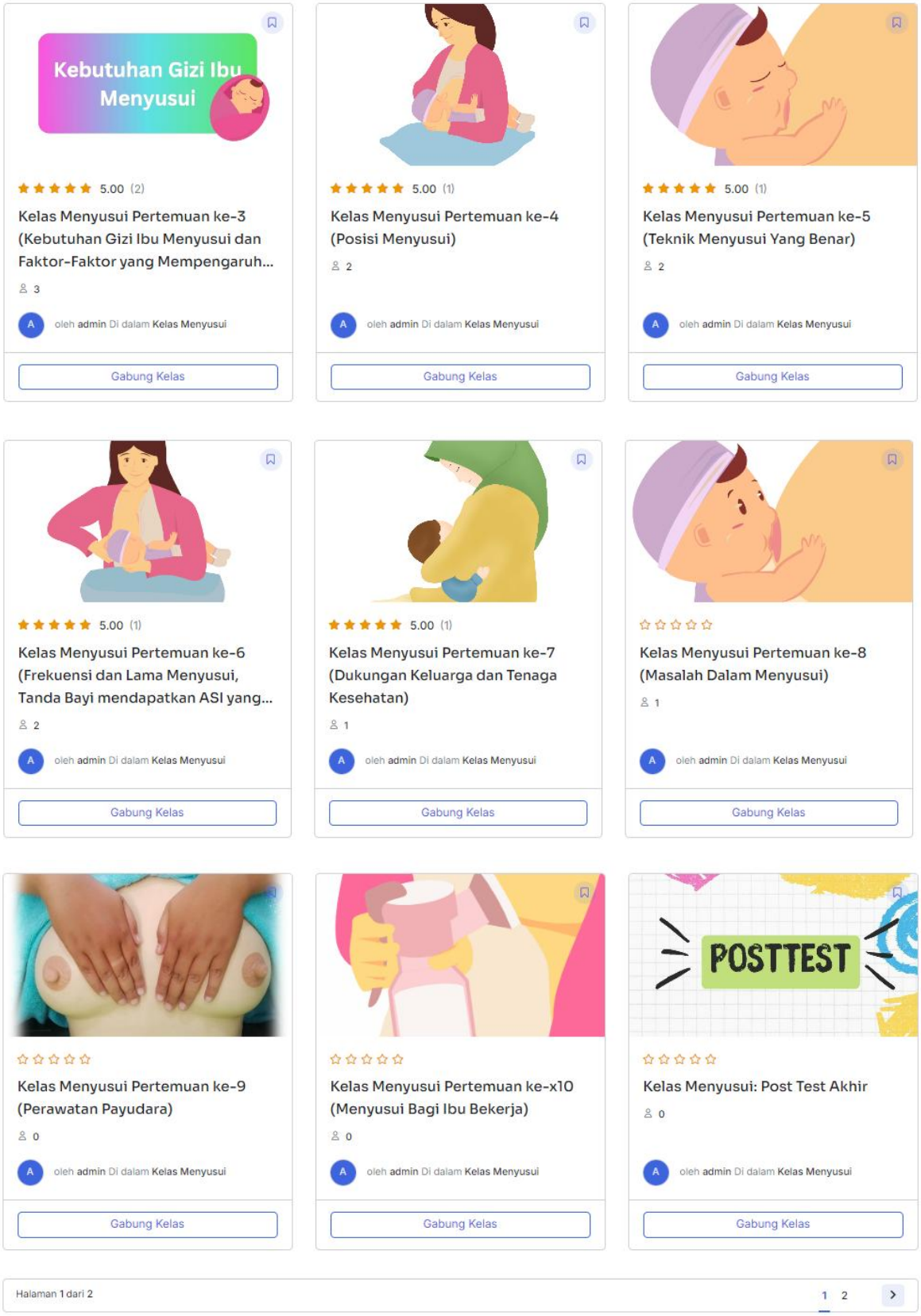
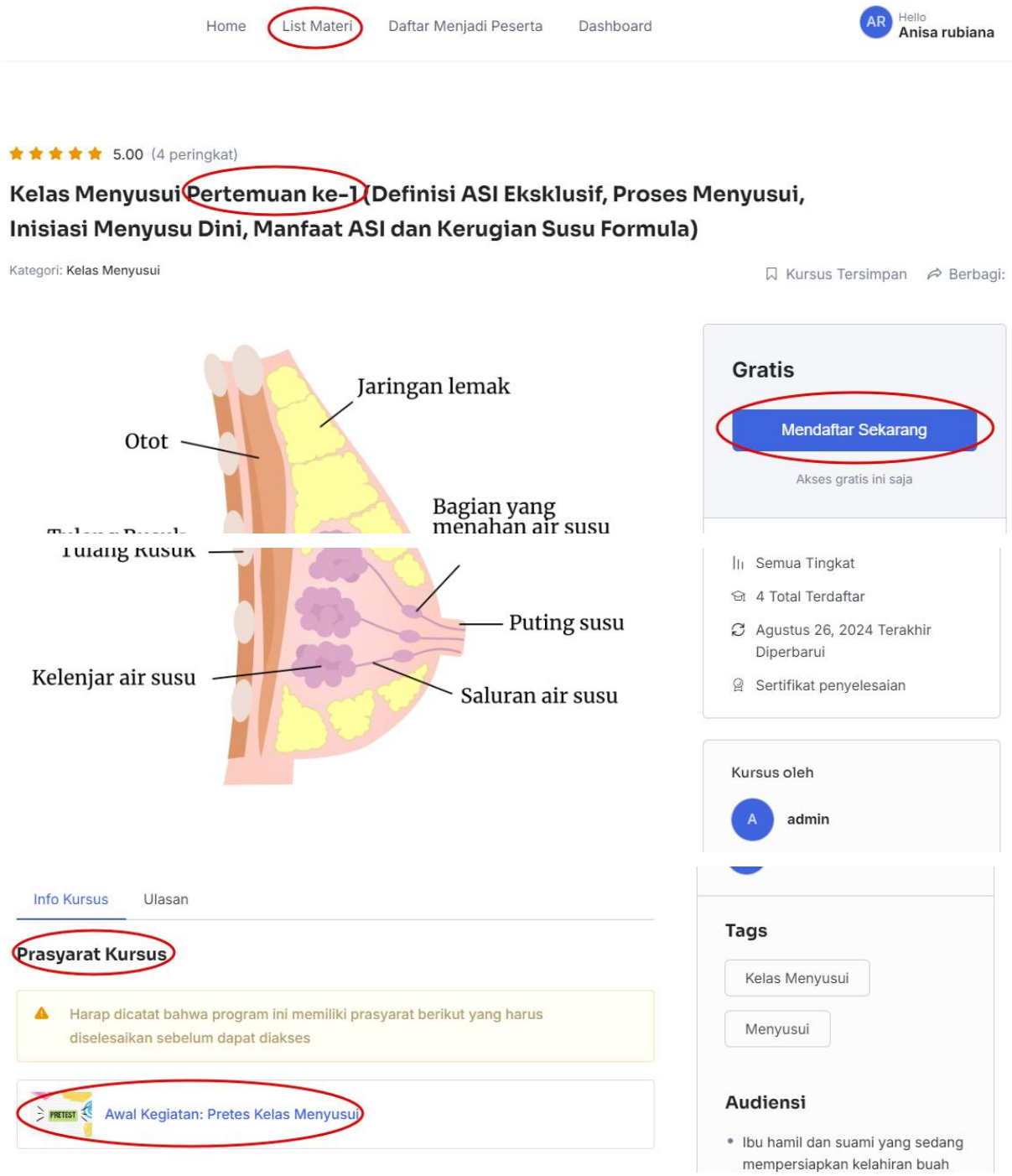


Figure 4: List of material menu display of breastfeeding class website


Home
List Materi
Daftar Menjadi Peserta
Dashboard
Hello
Anisa rubiana
5.00 (4 peringkat)
Kelas Menyusui Pertemuan ke-1 (Definisi ASI Eksklusif, Proses Menyusui, Inisiasi Menyusu Dini, Manfaat ASI dan Kerugian Susu Formula)
Kategori: Kelas Menyusui
Kursus Tersimpan
Berbagi:
Jaringan lemak
Otot
Bagian yang menahan air susu
Tulang Rusuk
Puting susu
Kelenjar air susu
Saluran air susu
Gratis
Mendaftar Sekarang
Akses gratis ini saja
Semua Tingkat
4 Total Terdaftar
Agustus 26, 2024 Terakhir Diperbarui
Sertifikat penyelesaian
Kursus oleh
A
admin
Info Kursus
Ulasan
Prasyarat Kursus
Harap dicatat bahwa program ini memiliki prasyarat berikut yang harus diselesaikan sebelum dapat diakses
PRETEST
Awal Kegiatan: Pretes Kelas Menyusui
Tags
Kelas Menyusui
Menyusui
Audiensi
Ibu hamil dan suami yang sedang mempersiapkan kelahiran buah

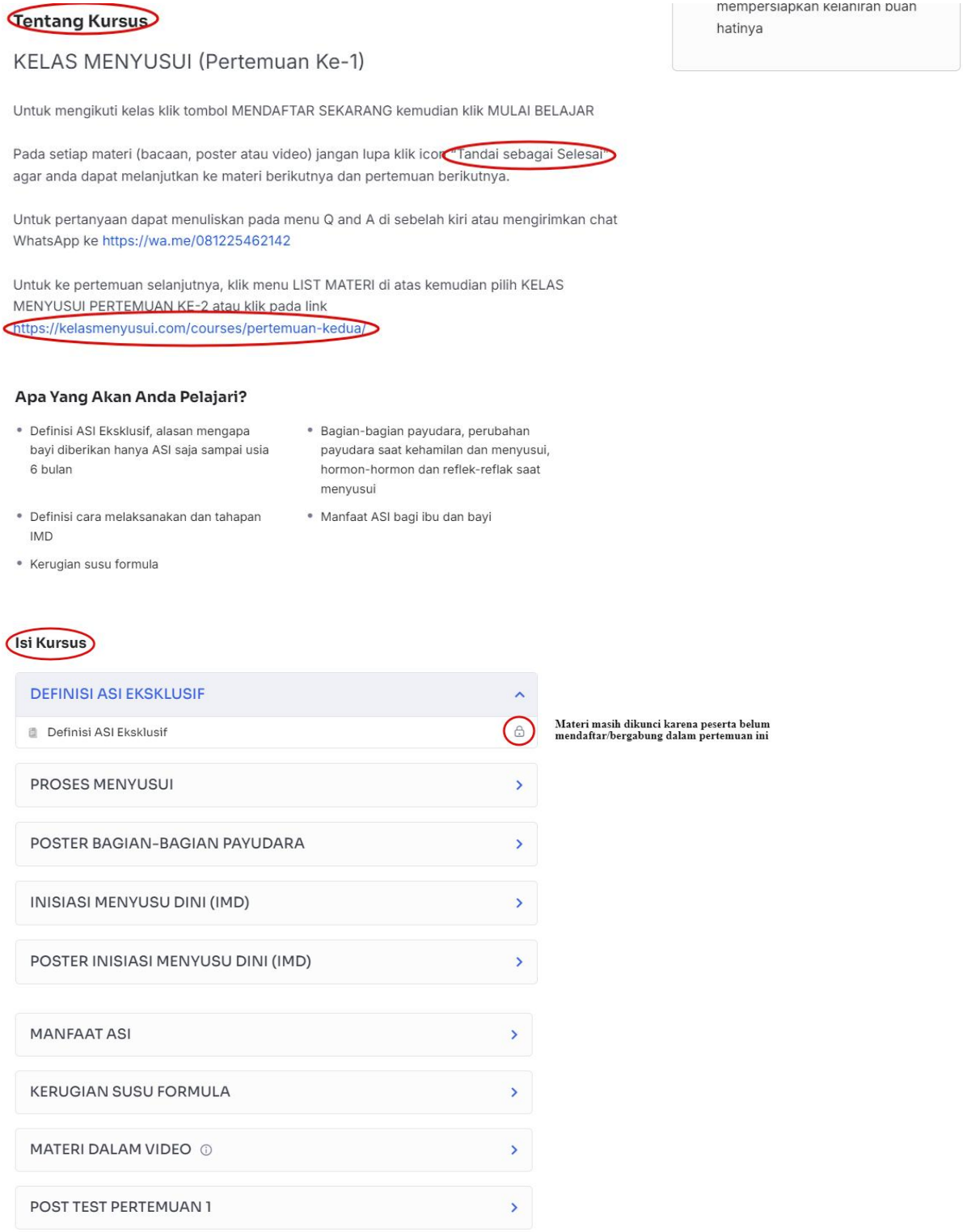


Figure 8: The contents of each meeting display of breastfeeding class website

Figure 9: e-Certificate display of breastfeeding class website

The 1st stage of the breastfeeding class website functional test was to determine whether the website functions properly, and whether the menu display and content on the website can function properly. The results of the 1st stage functional test stated that the breastfeeding class website can function properly, but when used simultaneously (trial on 60 respondents simultaneously) the website cannot be accessed, and errors or loading takes a long time. Respondents also stated that the menu display is still a bit confusing, especially at the beginning of use so respondents suggested making the menu display simpler, but when users are used to it, the menu display is quite easy to understand. The content of the material, both in the form of text, posters, and videos, it is considered to function well, but improvements are still needed so that the appearance of the material can function more optimally as an intermediary for information to the target. The material in the form of text is considered clear, easy to understand, adequate, informative, complete, complex, and useful, but there is also too much writing so that it can be summarized and more images added. The material in the form of videos is considered easy to understand, quite clear, good, interesting, and very creative but the duration of the video is too long, while the material in the form of posters is clear, interesting, good, cool, and easy to read. The breastfeeding knowledge quiz or questionnaire at each meeting works well because it can measure achievements at each meeting, but the quiz cannot function well if the reader first does the quiz before reading the material, so respondents suggested that the quiz be locked or can be done after the respondent reads the material. Respondents also stated the advantages or positive values of the breastfeeding class website, namely the material is very complete, easy to understand, very useful, increases insight, is very informative and new knowledge that is rarely known to people, the material is equipped with pictures and videos, can be read anytime and accessed anywhere and can be used to fill free time. The results of the 1st stage functional test will be the basis for improving and perfecting

the breastfeeding class website so that in the 2nd functional test the website is expected to function 100% properly.

Assessment of the material in text form, getting input on material that is too written so that it can be summarized and more images added. In this case, the research team tried to provide material in the form of posters and videos, so that it can facilitate readers to choose the appropriate learning media. Posters and videos will provide visualization so that the message can be more easily captured by the reader. A study reported that video and poster media affect adolescent knowledge about menstrual pain. The type of video media can be used as a medium in health promotion activities because video media is a modern interactional media that is following the development of the times (advancement of science and technology), namely media that can be seen and heard. This type of poster media has advantages and higher appeal because it emphasizes the strength of the message, visuals, and colors. Posters can be images that have attractive colors so that they can capture people's attention by instilling a certain meaning that the poster maker wants to convey, according to the purpose of the poster (Agriani et al., 2023).

The assessment of the video material received input about the video duration being too long. In this case, the research team will make improvements by creating effective video educational media. Brame (2016) stated that for videos to function as learning experiences (effective videos), it is important for instructors to consider three elements for video design and implementation, namely: 1) Cognitive load, 2) Student engagement, 3) Active learning together. These three elements provide a solid foundation for the development and use of videos as effective educational tools. The first element is about cognitive load, an effective learning experience will minimize extrageous load, optimize germane load, and manage the intrinsic load. So there are four effective practices in video design, namely (1) signaling or the use of text or symbols on the screen to highlight important information; (2) segmenting, which allows learners to engage with small pieces of new information and gives them control over the flow of new information, segmenting can be achieved by making short videos, the ideal duration for learning videos is 5-10 minutes; (3) Weeding, which is weeding or removing information that does not contribute to learning objectives; and (4) matching modality, namely using audio verbal and visual/pictorial to convey information. There are several ways to help student involvement including making videos that are not too long (average 6 minutes), using conversational language rather than formal language, speaking relatively quickly and enthusiastically, ensuring that the video material can be used for various classes, and using audio and visuals (Susanti et al., 2018).

The breastfeeding class website was generally considered to function well and has displayed very complete, easy-to-understand, very useful, insightful, and very informative, can be read anytime and

accessed anywhere material. These positive values can support the achievement of better exclusive breastfeeding targets. However, in certain conditions, there are still obstacles in the functionality of the breastfeeding class website so improvement efforts are needed to get better results. This was in line with previous research on the official website of the Bandung city government, which states that efforts that can be implemented to improve the quality of website functions and features are by paying attention to several factors, namely design factors, accessibility, site content, functions, and features (Nurseptian et al., 2014).

Several studies have reported the positive benefits of education through information technology on the breastfeeding process or exclusive breastfeeding. A study conducted a trial to use new teaching methodologies such as the internet and websites in teaching mothers about breastfeeding. Although there was no difference between the intervention and control groups, the web-based breastfeeding education program can contribute to improving breastfeeding self-efficacy, knowledge, and attitudes. Therefore, there is a great need to advertise the website and educational materials and link them to social media to make them feasible and attractive to pregnant or breastfeeding mothers. The effectiveness of web-based education programs for breastfeeding mothers must be attractive enough to encourage mothers to use them effectively. Ahmed and Ouzzani (2013) found that the use of an interactive web-based breastfeeding monitoring system was effective, feasible, and acceptable among breastfeeding mothers to improve breastfeeding outcomes (Abuidhail et al., 2019). Another study explained that the combination of educational activities with web-based personal support through discussion forums appeared to be the most effective way to improve breastfeeding outcomes and long-term exclusive breastfeeding rates (Almohanna et al., 2020). A study also reported that internet-based interventions had a positive effect on exclusive breastfeeding rates (Rahayu et al., 2024).

CONCLUSION

This study resulted in a breastfeeding class website with the domain www.kelasmenyusui.com which is a web-based LMS and can be accessed via PC, laptop, and android. The results of the 1st stage of the breastfeeding class website function test stated that in general, the website functions well, but in certain conditions the website function still experiences obstacles, so some improvement efforts are needed so that the website can function 100% well.

Acknowledgments

We would like to express our gratitude to Poltekkes Kemenkes Semarang for facilitating funding for this research activity.

Declaration of Interest Statement

In this study, no conflict of interest was found.

REFERENCES

Abuidhail, J., Mrayan, L., & Jaradat, D. (2019). Evaluating effects of prenatal web-based breastfeeding education for pregnant mothers in their third trimester of pregnancy: Prospective randomized control trial. *Midwifery*, *69*, 143–149.

Agriani, A., Batara, A. S., & Multazam, A. (2023). Perbandingan Pengaruh Antara Media Video Dengan Poster Terhadap Pengetahuan Dan Sikap Tentang Dismenore Pada Siswi Di MAS PP Yasrib Lapajung Kabupaten Soppeng. *Window of Public Health Journal*, 701–708.

Almohanna, A. A., Win, K. T., & Meedya, S. (2020). Effectiveness of internet-based electronic technology interventions on breastfeeding outcomes: systematic review. *Journal of Medical Internet Research*, *22*(5), e17361.

Karim, A., Bangun, B., Purnama, I., Harahap, S. Z., Irmayani, D., Nasution, M., Haris, M., & Munthe, I. R. (2020). *Pengantar teknologi informasi*. Yayasan Labuhanbatu Berbagi Gemilang.

Kemenkes RI. (2014). *Pegangan Fasilitator Kelas Ibu Hamil*. KEMENKES RI.

Kemenkes RI. (2020). *Profil Kesehatan Indonesia Tahun 2019*. Kemenkes RI.

Kemenkes RI. (2021). Profil Kesehatan Indonesia 2020. In *Kementrian Kesehatan Republik Indonesia*.

Kemenkes RI. (2022). *Profil Kesehatan Indonesia Tahun 2021*.

Kemenkes RI. (2023). *Profil Kesehatan Indonesia Tahun 2022*.

Kemenkes RI. (2024). *Profil Kesehatan Indonesia Tahun 2023*.

Komalasari, R., Akhriana, A., Mandias, G. F., Hudin, J. M., Syamsiah, N., Munawar, Z., Hidayatulloh, T., Sudipa, I. G. I., Ma'sum, H., Kumar, S., Dewi, C. N. P., Murdani, E., Ahyuna, & A.Gunawan. (2023). *Pengantar Teknologi Informasi*. Indie Press.

Nuradhiani, A. (2020). Pemberian ASI Eksklusif dan Makanan Pendamping ASI (MP-ASI) pada Kejadian Stunting di Negara Berkembang. *Jurnal Gizi Kerja Dan Produktivitas*, *1*(1), 23–28.

Prawirohardjo, S., Saifuddin, A. B., Rachimhadhi, T., & Wiknjosastro, G. H. (2016). *Ilmu Kebidanan Sarwono Prawirohardjo* (Edisi Keem). PT BPSP.

Rahayu, D., Alfiana, M., & Ananda, N. (2024). PENGARUH INTERVENSI BERBASIS INTERNET TERHADAP PEMBERIAN ASI. *Medic Nutricia: Jurnal Ilmu Kesehatan*, *2*(5), 11–30.

Sembada, S. D., Pratomo, H., Fauziah, I., Amani, S. A., Nazhofah, Q., & Kurniawati, R. (2022). Pemanfaatan media online sebagai sarana edukasi kesehatan pada remaja: tinjauan literatur. *PREPOTIF: Jurnal Kesehatan Masyarakat*, *6*(1), 564–574.

Susanti, E., Harta, R., Karyana, A., & Halimah, M. (2018). Desain video pembelajaran yang efektif pada pendidikan jarak jauh: Studi di Universitas Terbuka. *Jurnal Pendidikan Dan Kebudayaan*, *3*(2), 167–185.

Surtania, S., Anggorowati, A., & Juniarto, A. Z. (2023). Media Edukasi Berbasis Aplikasi terhadap Kemampuan Ibu Menyusui. *Journal of Telenursing (JOTING)*, *5*(1), 1189–1197.

Utami, F. S. (2016). Translasi dan validasi iowa infant feeding attitude scale di indonesia. *Jurnal Kebidanan Dan Keperawatan*, *12*(1).

Wargiana, R., Susumaningrum, L. A., & Rahmawati, I. (2013). Hubungan Pemberian MP-ASI Dini dengan Status Gizi Bayi Umur 0-6 Bulan di Wilayah Kerja Puskesmas Rowotengah Kabupaten Jember. *Pustaka Kesehatan*, *1*(1), 47–53

Wayan, I. W. E. W. K. (2021). Aplikasi informasi ibu hamil dan menyusui berlandaskan android. *Jurnal Ilmu Teknik*, *1*(1).

Yuliani, D. R., Aini, F. N., Winarso, S. P., & Amalia, R. (2023). The Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF) Versi Indonesia: Studi Pendahuluan Uji Validitas Dan Reliabilitas Pada Ibu Hamil. *Journal of Midwifery Science: Basic and Applied Research*, *5*(2), 38–42

.

Yuliani, D. R., Sumiyati, S., Winarso, S. P., & Amalia, R. (2022). *Persiapan Menyusui Bagi Ibu Hamil dan Pascasalin*. Pustaka Rumah C1nta.

Yusmaharani, Y., Nurmaliza, N., & Ratih, R. H. (2021). Ibu Bekerja dengan Pemanfaatan Kelas Ibu Hamil. *Midwifery Journal*, *1*(4), 183–18