

# BINUS Online Learning Web User Experience Improvement

Lena

Information Systems Department, BINUS Online Learning,  
Bina Nusantara University,  
Jakarta, Indonesia 11480  
lena.chow@binus.ac.id

*Abstract* – With the technology nowadays where information is one click away, news travels within seconds through online news, social media, chat, etc. It's not impossible anymore for someone who lived miles away to get information at the same time with someone who live near the news' source. New business starts to grow aligned with advancement in information technologies to tap bigger market. Each of them have different ways of showcasing their products, and how they showcase products can influence their customers to continue using it and to eventually make decision to purchase. Stores are available in e-market form, public transportations' tickets are available online, education industries start to have websites, some of them even have online classes. Whether you are a busy professional looking for the next career step or a school leaver wanting to start your career without sacrificing your education, online study would be the solution. Committed to providing a world class education with international learning experience that makes positive contributions to the global community, BINUS University implemented a method called BINUS Online Learning. The method allows students not to come to campus, because almost all lectures conducted through the online system. Learning-teaching activities are in BINUS Online Learning web (Learning Management System). To ensure Binus online web can be used as tool to achieve Binus online mission, then improvement should be done continuously. This paper will search for continuous improvement especially user experience.

**Keywords:** User experience; web user experience; online learning; online learning user experience.

## I. INTRODUCTION

With the advancement of Information and Communication Technology (ICT) nowadays where information is one click away, news travels within seconds through online news, social media, chat, etc. It's not impossible anymore for someone who lived miles away to get information at the same time with someone who live near the news' source. New business starts to grow aligned with advancement in information technologies to tap bigger market. Stores are available in e-market form, public transportations' tickets are available online, education industries start to have websites, some of them even have online classes. Each of them have different ways of showcasing their products, and how they showcase products can influence their customers to continue using it and to eventually make a decision to purchase.

Indonesia as one of the developing country has also got the impact of ICT growth, The number of internet users in 2017 has reached 143.26 million people, equivalent to 54.68 percent of the total population of Indonesia (based on 2017 survey by Indonesian Internet Service Providers Association, or APJII). And according the same survey, about 44.16 percent of the respondents accessed the internet with their mobile phones, 39.28 percent used computers and mobile phones, while 4.49 percent used computers only. In 2017, 104.96 million people were accessing the internet in Indonesia. This figure is projected to grow to 133.39 million in 2021. With over 104 million internet users, Indonesia is one of the biggest online markets worldwide. As of March 2017, online penetration in the country stood at only slightly over 50 percent. Popular online activities include mobile messaging and social media.

More and more Internet users in Indonesia are going online through their mobile phones, and as habits and preferences change, mobile Internet in Indonesia is shaping

up to see rapid growth, according to a survey from Chinese Internet giant Baidu. The online survey polled more than 11,000 people across Indonesia, asking them questions about the types of devices they use, how often they're online and how they spend their time. A quarter of respondents said they spend more than five hours online every day accessing search engines, social networks, watching videos or shopping. Most people said they preferred to go online during lunch or after work

ICT also has made a significant impact on education in recent years in terms of the ways and manner in which we conceive, see, work, think, learn and socialize. With regard to teaching and learning, especially in distance education where the learner and the teacher are separated in time and space, ICT in the form of a web-based learning environment has supported an array of instructional delivery media by utilizing the effective pedagogical strategies that involve the active participation of the learner in the construction of new knowledge. With the advent of globalization, the overall objectives of education should not be seen anymore as simply to convey a known body of knowledge, but in addition, education should be able to enhance the quality of the learner to generate, assess, access and apply knowledge and information to solve societal and other complex problems. (Ogunleye, A. O. (2010). Evaluating an online learning programme from students' perspectives. Journal of College Teaching and Learning).

The evolution of online learning has stimulated investment by numerous technology firms vying to meet demands for software and other tools indispensable to the provider-student relationship. In turn, the availability of online education has grown exponentially in recent years. In 2004, about \$7 billion was spent developing the online learning market, according to a study by research firm IDC. The firm also found the amount spent was expected to grow nearly 30 percent each year during the subsequent four years. By 2008, estimates put the e-learning market's worth at between \$21 billion and \$28 billion. "[E-learning] is gaining momentum," said Ryann Ellis, editor of Learning Circuits, a magazine devoted to e-learning. "A lot of it has to do with the reusability of online learning. Instead of just having the money to send one person to class, you can build something and send 20 people through training." (Brown, A. (2006). Learning from a distance. Journal of Property Management, 71(4), 42-45.)

BINUS University as an information technology based educational institution that has experience in providing education using information and communication technology (ICT) for the students also gaining the momentum of online learning. With experience and supplies, Binus has pocketed the trust of the Government through Decree No. 146 / E / O / 2014 regarding the Implementation of Distance Education. BINUS University prepares and organizes BINUS Online Learning, learning through the website <http://ol.binus.ac.id> as an online learning media for individuals who want to learn and develop themselves without having to be tied to a specific schedule and place.

This method is very suitable for students who currently also status as professional and self-employed

employers and even housewives who want to continue to study S1 without hampered by time and place. Learning activities are designed to focus on the characteristics of students and to get quality results with the guidance of academic lecturers and experienced practitioners, making Binus Online Learning able to accelerate student career.

The main thing in BINUS Online Learning (BOL) is the studying outlet, which is the website. It is a tool for students and teacher to do activities in class, more than 80% of their activities are done using this website.

Table 1. Class activities using BINUS Online Learning web

Class Activities using BOL Website	Student	Lecturer
View Schedule	X	X
View and Download study materials	X	X
Conduct forum Discussion	X	X
View & Submit Assignment	X	
Input Score for Assignment and Final Test		X
View Score for assignment and Final Test	X	

Table 2. Class activities outside BINUS Online Learning web

Class Activities outside BOL Website	Student	Lecturer
Do assignments	X	
Do Final Test	X	
Review and score assignment and test result		X

Mainly learning-teaching activities are in Binus Online Learning web, it is the main tool to achieve Binus Online mission: "to broaden the access of learning, in higher education program and to helps individuals to achieve their educational and career goals, by providing **flexible services & learning quality** to empower the community".

To ensure Binus online web can be used as tool to achieve Binus online mission, then improvement should be done continuously. By learning how users use it, what activities that they do, what are the pain points when using the web, hopefully can:

- Get understanding about current website usage
- Plan and implement improvement
- Have ease to use website for lecturers and students

## II. METHODS

Data collection is the process of gathering and measuring information on targeted variables in an established systematic fashion, which enables one to answer relevant questions and evaluate outcomes. Steps for data

collections in user research:

- Define primary user groups. One way to get started is to create an initial or provisional definition of the users you'll be designing for. This describes your site's primary user groups, which can help you focus your research efforts for the right roles, demo-graphics, or other variables that may have an impact on how users will experience your site. User group definitions can be high level (a list defining each of your target user groups) or detailed and visual (a diagram showing multiple types of users, as well as how they interact with each other) This involves creating a framework that describes the main types of users you're designing for allowing you to focus your efforts in recruiting users for research.
- Plan for user involvement and conduct the research. This includes choosing one or more techniques for involving user groups in research, based on the needs of your project. In this study, we will use several of data collection type (Stawarski and Phillips, 2008)
  - Ethnographic research is a qualitative method where researchers observe and/or interact with a study's participants in their real-life environment
  - Questionnaires/ surveys are probably the most common data collection method is the questionnaire (Alreck and Settle, 1995). Ranging from short reaction forms to detailed follow-up tools, questionnaires can be used both to obtain subjective information about participants and to document objective, measurable impact results for an ROI analysis.
- Validate your user group definitions. Using what you learned from the research, you can solidify your user groups model.
- Generate user requirements. These are statements of the features and functions that the site may include. Add to business requirements and prioritize them to become project requirement

Design thinking is a mind-set in which the product concept and design for emotional impact and the user experience are dominant. It is an approach to create a product to evoke a user experience that includes emotional impact, aesthetics, and social- and value-oriented interaction. As a design paradigm, design thinking is an immersive, integrative, and market-oriented eclectic blend of art, craft, science, and invention.

- Empathize: Conduct research in order to develop knowledge about what your users do, say, think, and feel. Imagine your goal is to improve an onboarding experience for new users.
- Define: Combine all your research and observe where your users' problems exist. In

pinpointing your users' needs, begin to highlight opportunities for innovation. Consider the onboarding example again.

- Ideate: Brainstorm a range of crazy, creative ideas that address the unmet user needs identified in the define phase. Give yourself and your team total freedom; no idea is too farfetched and quantity supersedes quality. At this phase, bring your team members together and sketch out many different ideas. Then, have them share ideas with one another, mixing and remixing, building on others' ideas.
- Prototype: Build real, tactile representations for a subset of your ideas. The goal of this phase is to understand what components of your ideas work, and which do not. In this phase you begin to weigh the impact vs. feasibility of your ideas through feedback on your prototypes.
- Test: Return to your users for feedback. Ask yourself, "Does this solution meet users' needs?" and "Has it improved how they feel, think, or do their tasks?"
- Implement: Put the vision into effect. Ensure that your solution is materialized and touches the lives of your end users.

Usability is a quality or attribute that represents the ease with which a human-computer interface is used (Nielsen J (1993) Usability engineering. Morgan Kaufman, San Francisco).

The International Standards Organization 9241-11 (ISO 9241-11 (1998) Ergonomic requirements for office work with visual display terminals (VDTs)—part 11: guidance on usability) defines usability as "the extent to which a product can be used by specified users to achieve specific goals with effectiveness, efficiency, and satisfaction in a specified context of use."

Usability is a quality attribute that assesses how easy user interfaces are to use. The word "usability" also refers to methods for improving ease-of-use during the design process. Usability is defined by 5 quality components:

- Learnability: How easy is it for users to accomplish basic tasks the first time they encounter the design?
- Efficiency: Once users have learned the design, how quickly can they perform tasks?
- Memorability: When users return to the design after a period of not using it, how easily can they re-establish proficiency?
- Errors: How many errors do users make, how severe are these errors, and how easily can they recover from the errors?
- Satisfaction: How pleasant is it to use the design?

### III. RESULT AND DISCUSSION

Binus University Online Learning / Binus Online (<http://ol.binus.ac.id/Dashboard>) has modules / menu for the learning and teaching activities, also several link to other Binus Website such as library to support the learning system above. In this paper, we will analyze menu for learning and teaching activities. And below are binus online learning website' modules / menus to support the learning system in the url of <http://ol.binus.ac.id/>.

Table 3. Menu list in ol.binus.ac.id

Modules	Sub Module	Current	
		Students	Lecturers
Management	Login	X	X
	Forgot Password	X	X
	Contact Center Information	X	X
	User Information	X	X
	Update Password	X	X
Course/Topic	View Detail Topic Information	X	X
	View Video	X	X
	Download topic	X	X
Assignment and Exam	Download Assignment	X	X
	Upload Assignment Result	X	X
	View Assignment Score	X	X
	Input Score		X
	View Exam Score	X	X
	Input Exam Score	X	X
	Video Conference Attendance	X	X
Attendance	Video Conference Attendance History		
	Forum Attendance Details		X
	View Forum	X	X
	Read/ Write in forum	X	X
Forum	View Group Discussion	X	X
	Read/ Write Group Discussion	X	X
	Class Forum History		X
	Class Assignment History		X
Class History	Pop Up notification	X	X
	News / Update		
	Evaluation (Score and attendance)		
	Course detail	X	X
	Class update Information		
	Schedule		
	Classmate		
Classmate Information	Lecturer	X	X
	Classmate	X	X
	Group list	X	X

Message Tab Menu List	Message room	X	X
	Activities	X	X
	Evaluation	X	X
	Topic	X	X
	Forum	X	X
	Video Conference	X	X
	Classmate	X	X
	Video	X	X
	Assignment & quiz	X	X
	References	X	X
Burger Menu List	Dashboard	X	X
	Scoring	X	X
	Mail	X	X
	Private	X	X
	Attendance	X	X
	Library	X	X
	Services	X	X
	registration	X	X

Table 3 shows that learning and teaching activities can be done in the web. In this paper we are going to dig deeper whether there are more user needs that has not been fulfilled by current web and also analyze on the usability of the website to understand the pain point of the users which are lecturers and students.

Therefore we need to analyze the teaching learning media, whether it can assist the teaching activities efficiently (for time constraint) and can be accessed from anywhere (for place constraint) and also easy to understand (for user's background diversities).

These simulations will analyze steps that need to be done by the user in order to do an activity in the website, to see whether there is any steps that can be decreased for efficiency. In Teaching and Learning there are several main activities:

#### 1. Learn (Material)

- a. How to access learning / teaching material through online learning. In the website lecturer and students are able to access their topic material by going to Topic in one of the tab. The steps are:
  - i. Click Dashboard (1)
  - i. Click Course (2)
  - ii. Click Topic (3)
- b. How to download material
  - i. Download per material: Each material is available in each week /session, making it easier to search for certain topics and download
  - ii. Download several/ all material at once. as a lecturer, we need to download the whole material to read and learn before the class started. and it is not fast. lecturer need to click one by one, per material. 1 session usually has more than one material and can not be downloaded simultaneously either.

## 2. Discuss (Forum)

- a. How to access discussion media (Forum). There several ways to access the forum, here one of the shortest ways:
  - i. Dashboard(1),
  - ii. Click Course - Forum (2),
  - iii. Click Course topic (3),
  - iii. Click Classroom (4),
  - iv. Choose discussion title (5).
- b. How to view their learning / teaching attendance / involvement summary. There is no summary for learning and teaching attendance in the web
- c. How to view latest comment. Click notification showing new discussion in the main page (dashboard).

## 3. Exercise (Assignments and Quiz)

- a. How student submit.
  - i. Dashboard(1),
  - ii. Click “assignment to do” (2),
  - iii. Click upload assignment (3),
  - iv. Click Update (4),
  - v. Add file to assignment (5),
  - vi. Click Upload (6),
  - vii. Click Success button(7).
- b. How lecturer give score. There several ways to access the forum, here one of the shortest ways:
  - i. Dashboard (1),
  - ii. Click Course - assignment (2),
  - iii. Click assignment topic (3),
  - iv. Click name / group in the table (4),
  - v. Input score (5),
  - vi. Submit (6),
  - vii. Click success button (7).
- c. How lecturer view score summary per students. There is no summary to view score summary per students.
- d. How Lecturer view score summary per 1 topic. There is no summary to view score summary per topic.

## 4. Do Final Test

- a. How lecturer give score for final test.
  - i. Main Menu (1),
  - ii. Scoring (2),
  - iii. Exam Score Entry (3),
  - iv. Choose academic career (4),
  - v. Choose period (5),
  - vi. Choose one of the schedule / class (6),
  - vii. Click name(7),
  - viii. Input score(8),
  - ix. Click submit(9),
  - x. Click OK success button(10), continue click name.
- b. How lecturer view score summary per class. 1 class can have several schedule and exam location, and the scoring is divided based on it. Therefore sometimes

we can only view part of the class not all of the class.

- i. Main Menu (1),
- ii. Scoring (2),
- iii. Exam Score Entry (3),
- iv. Choose academic career (4),
- v. Choose period (5),
- vi. Choose one of the schedule/ class (6),

Primary user groups for ol.binus.ac.id website are Students and Lecturers. For students, questionnaires were distributed for them. The main purpose of the questionnaire is to understand which features that are used frequently by the students, which later on will be used as baseline to put the features to their main dashboard for easy access. For lecturers, will do the ethnographic research when she/he does the activities in ol.binus.ac.id

- View and download course material
- Teaching in forum
- Review and give scores to Assignments
- Review and give scores to final exam
- View student’s attendance and scores

Questions are made using Google Form. Questions below (Table 4) are questions regarding ol.binus.ac.id, where the result later on will be used as input to revise/improve the web in order to give more effective teaching and learning experience.

Table 4. Questions in Questionnaires

<p>Function in Binus Online</p> <p>Below are some of the web features that are available in ol.binus.ac.id</p> <p>Please answer the questions below based on your usage.</p> <p>1 = never / hardly used</p> <p>5 = always used, opened every time I surf the web.</p> <ul style="list-style-type: none"><li>• Forum (classroom)</li><li>• Forum (Team room)</li><li>• Schedule</li><li>• Course Material</li><li>• Personal / Group assignments</li><li>• Previous period courses</li><li>• View assignments’ scores</li><li>• View attendance</li></ul> <p>What is most troublesome for you when surfing ol.binus.ac.id web?</p> <p>For 1 = very bad and 10 very good. How much value do you give to website ol.binus.ac.id, after doing activities in it?</p>
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Responses from the questionnaires can be seen in Fig. 1 to 9.

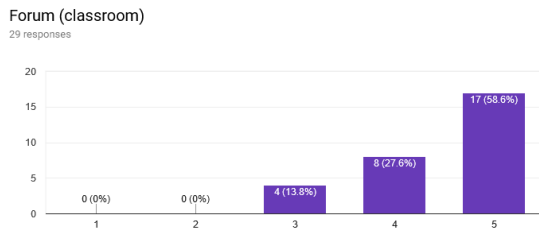


Fig. 1. Responds related to Forum (Class Room)



Fig. 6. Responds related to Historis Mata Kuliah

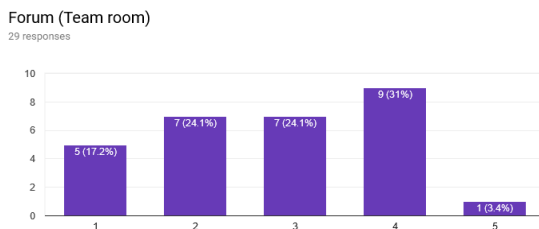


Fig. 2. Responds related to Forum (Team Room)

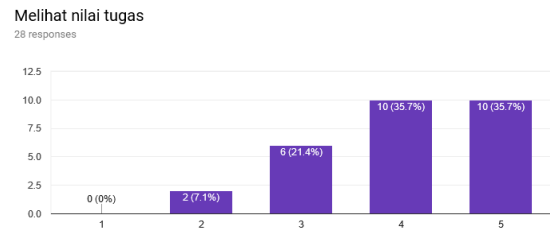


Fig. 7. Responds related to Nilai Tugas

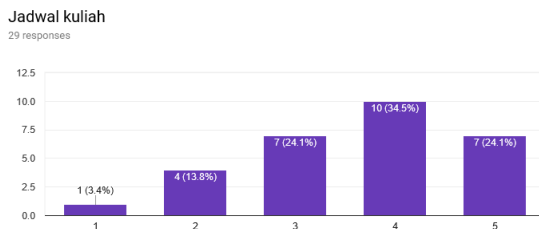


Fig. 3. Responds related to Jadwal Kuliah

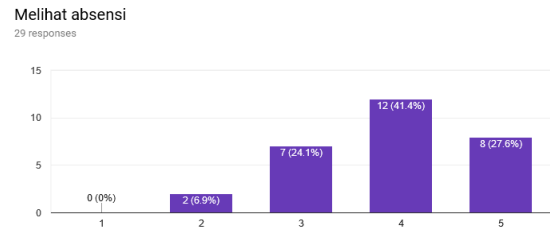


Fig. 8. Responds related to Melihat Absensi

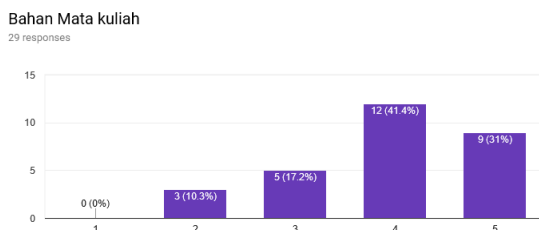


Fig. 4. Responds related to Bahan Mata Kuliah

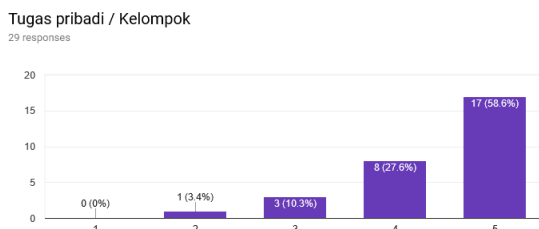


Fig. 5. Responds related to Tugas Pribadi/Kelompok

What is most troublesome for you when surfing ol.binus.ac.id web? Here are General Summary for improvement:

- Blocking / slow / hard to access the web when assignments / forum deadline are almost end, cause everybody is accessing it.
- summary of forum discussion, assignment and quiz scores
- Notification for assignment, forum, V-Con and tuition fee payment

Untuk 1 = sangat buruk dan 10 sangat baik. Berapa nilai yang anda berikan untuk website ol.binus.ac.id, setelah melakukan aktivitas di dalamnya?

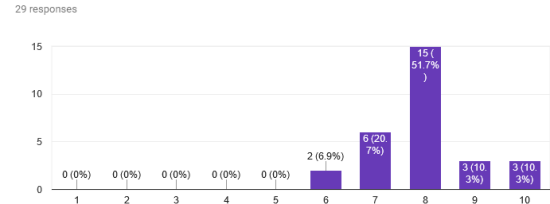


Fig. 9. Responds related to Overall Website

Lecturers ethnographics:

- View and download course material

- Could not download all material all at once, click and downloading it one by one takes time
- Teaching in forum
  - Too many steps for just viewing the forum,
  - do not have a summary of who have participated in forum
- Review and give scores to Assignments
  - Too many steps for input scores, need to input it one by one take time
  - can not view summary of each student's attendance scores
  - can sort the table
- Review and give scores to final exam
  - Too many steps for input scores, need to input it one by one take time
  - exam scoring are group by date and location of the exam, not by the class, so 1 class can have more than 3 scoring menu.
  - can sort the table
- View student's attendance and scores
  - can not view summary of each student's attendance

Most of the features on current dashboard are features that are used frequently by students except for Previous Period Course. Therefore other than Previous Period Course, all should stay in main dashboard. There are requests for summary so students and lecturers can view all their summary scores, attendance and course material. There are also requests to have notification for deadline of assignment or forum or new update regarding each.

Based on Data collection, we will propose improvement in the User Experience area to give better usability. The improvement will be divided into four categories:

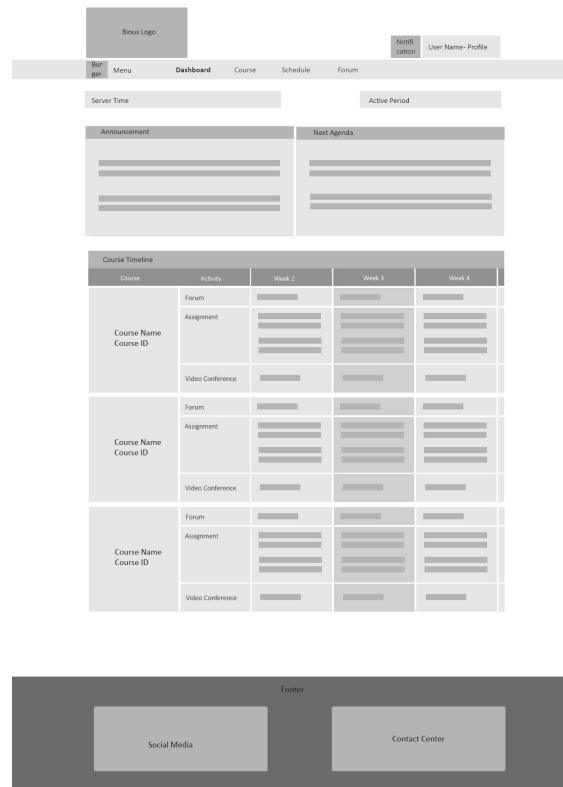


Fig. 10. Recommendation for Main Dashboard

### 1. Main dashboard

Most of the features needed for teaching and learning activities are available in the current website. However, there are some of the features' user flow that we can improve, for example ensuring easy access for frequently used features (Fig. 10). By minimizing some steps or creating shortcuts to go directly to the feature will save a lot of time for user.

The most frequently used features based on survey, need to have short cut in the homepage, to minimize steps for user, which are:

- Material
- Forum
- Assignment and scoring
- Schedule

The current homepage has already full enough to have additional features, therefore before putting in the additional shortcut in the page, we should cut down or minimize the homepage usage. In the first dashboard page there are 2 profile views of the user. As an example, lecturer has profile on the top right of the page and also in the middle of the page that takes more than half of the page. Therefore we're going to take out the one that take a lot of space.



Fig. 11. Recommendation for Assignment and Scoring

## 2. Assignment and Scoring

As a lecturer, one of the tasks is to review assignment and give score. There is already a page for it, but there are 7 steps to just go to the assignment, later on from dashboard, we can directly go to the topic that we want to score. that minimize the number of steps from 7 to 5. Proposed (Fig. 11):

- Dashboard (1),
- Click Course based on topic - assignment (2),
- Click name / group in the table (3),
- Input score (4),
- Submit (5).

When a lecturer do the scoring and also comment in another form, and that can not be done in one together with the scoring page, so having another form for scoring detail is necessary. However, sometimes we forgot or not sure whether we already give the right scoring, cause of typo. therefore we need to make sure that the score we give is correct, however in order to do that, we need to relick the update button to go to the score detail form, and when we're in the detail, we see that we already give the right score, no need to change it, so we have to close the form. in order to eliminate this unnecessary step, we propose to put final score on the first page, for viewing.



Fig. 12. Recommendation for Topic Material

## 3. Topic Material

Topic material feature (Fig. 12) has already functional enough, however as mentioned above, when we want to have all of the material from 1 session that has a lot of materials, material from all topics, there is no download-all option. By adding button for these 2, we can minimize the time to download from few seconds or even a minute to one second. Because we eliminate all the steps needed to download many materials.

## 4. Attendance and Assignment Scoring board

There are some features needed by lecturer or students that are not yet available, therefore we're going to add these features too. By adding attendance and assignment scoring board, as a student or a lecturer can preview their result for every activities that they have to do each week.



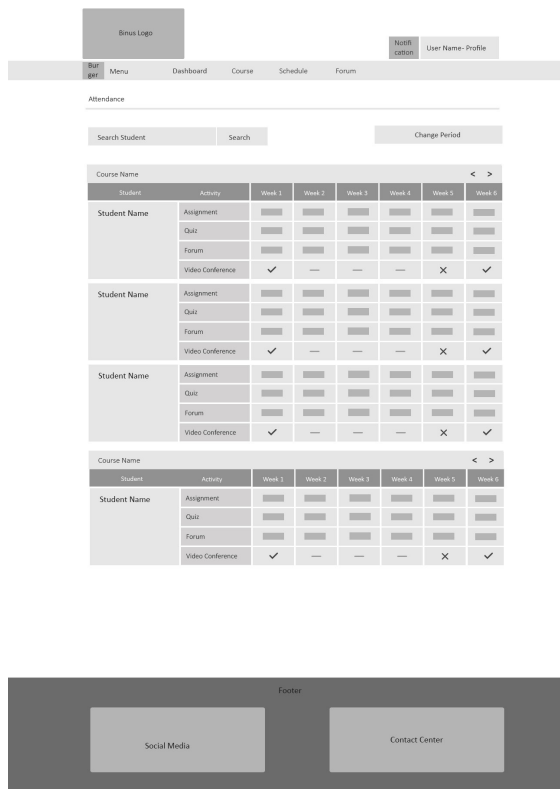


Fig. 13. Recommendation for Attendance and Assignment

## IV. CONCLUSION

Binus Online website has done its job so far, teaching and learning functions works well. However, adapting to current needs is always a good strategy whether it is for the topic materials, and also the website itself. In this research, we only concentrating on the main features of the web, which are the teaching and learning features. However, there are still a lot of features that we need to re-analyze in order to have a better website usability. and also we haven't discussed the right capacity for this website in order to serve all users, and the content management system itself. Recommendations for future development:

- Features update in this website, need to be developed.
- Revamp the website, so it can become a responsive web
- Revisit the current infrastructure to analyze the capacity
- Do another research for content management system, and the other features in this

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