The development of an e-Workload Distribution System: A focus on the fair distribution of teaching workloads of lecturers.

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Overview..  e - Workload

• Introduction  ~ Issue on Teaching Workload Distribution
  ~ Background of Study

• Methodology  ~ Evolutionary Prototyping Model

• Findings & Discussion  ~ System Requirement Analysis;
  ~ System Development Phase;
  ~ Testing Phase

• Conclusion

• References
• **Focused issue**
  - Human Resources Management in Educational Sector
  - Distribution of Teaching Workloads

• The human resource management of an institution is defined as a complex activity that needs to be handled transparently, efficiently, and fairly by administrators (Rusnock & Borghetti, 2018).
• The distribution of teaching workload is one of the most important activities that needs to be carefully carried out by the management of educational institutions to ensure teachers, instructors, and lecturers can discharge their duties efficiently, which surely can lead to the development quality students (Awanis Mohd et al., 2016; Nugraha et al., 2019).
  • Hence, there is a pressing need to put in place a system —

A workload distribution management system -- **e-WLOAD.**

**Introduction.** **e-Workload**
• **Background of Study**
  ~ Issue faced by Academic Lecturers in Educational Institutions
  ~ Dissatisfactions over their teaching workload
  • alleging that they have to teach too many courses or to handle too many classes. Consequently, they will have little time to focus on their other duties, such as carrying out research, writing and publishing academic papers, and providing consultations to other agencies (Steenkamp & Roberts, 2020).
  • The fair distribution of teaching workloads should not be treated lightly... as too much work that can lead to a myriad of physiological and emotional problems, E.g. anxiety or depressions → can affect the teaching and learning process, compromising the reputation and productivity of educational institutions (Azita Abdul Rahim, 2012; Arzizul Antin & Dg Norizah Ag Kiflee@Dzulkifli, 2018; Erdogan & Topuz, 2020).

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**Introduction.. e - Workload**
This Study (e – Workload) was carried out to develop and test a workload management system; (a prototype of such a system to help the management of a university to efficiently and fairly distribute teaching workloads of lecturers).
• used the Evolutionary Prototyping
  - which can be used to develop various software systems &
  also overcome weaknesses in other self-generated or manual prototyping
  (Anjum et al, 2019).

  ~ consists of two cycles or iterations, with each cycle consisting of five processes;
  requirement analysis, data collection, system design, system development, and testing.
<table>
<thead>
<tr>
<th>Cycle / phase</th>
<th>Cycle 1</th>
<th>Cycle 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>System requirements analysis</td>
<td>The identification of the criteria for distributing the workloads of lecturers through interviews and document analysis.</td>
<td>The collection of system requirements for lecturers and courses modules.</td>
</tr>
<tr>
<td>Data collection</td>
<td>The collection of data related to lecturers’ teaching workloads (7 years), courses, and programs; information on lecturers’ 5P; the processing, cleaning, benchmarking, and validation of data; and the collection of data samples.</td>
<td></td>
</tr>
</tbody>
</table>

Methodology..  

*e-Workload*
<table>
<thead>
<tr>
<th>Cycle / phase</th>
<th>Cycle 1</th>
<th>Cycle 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>System design</td>
<td>A preliminary experiment of several algorithms, the design classification of courses, lecturers, and workload distribution, and database design.</td>
<td>The design of system interfaces and components, and the improvement of the database.</td>
</tr>
<tr>
<td>System development</td>
<td>The developments of a classification and workload generation engine and database.</td>
<td>The overall development of the system (prototype); involving all the essential components based on GUI and the improvement of the database.</td>
</tr>
</tbody>
</table>

**Methodology.. e - Workload**
<table>
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<tr>
<th>Cycle / phase</th>
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<th>Cycle 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Testing</td>
<td>The testing of the classification and workload generation engine using data samples for the improvement of the prototype.</td>
<td>System testing involving functionality test, test-case and user testing.</td>
</tr>
</tbody>
</table>

Methodology..  
*e-Workload*
• focuses on the system requirements analysis phase, development phase and testing phase, involving the functionality test of the system prototype.
• Requirement Engineering Strategy
  
  generate the System Functional Requirements (Suliana Sulaiman et al, 2019), which effectively helped address the system requirement analysis phase.
• **System Requirements Analysis:**

~The Criteria for the Distribution of Lecturers’ Workload~

- **Status** - This criterion highlights available lecturers who will be assigned appropriate teaching workloads.
- **Minimum and maximum credits** - Each lecturer will be assigned a maximum limit of eligible teaching credit based on his or her position at the departmental, faculty, or university level.
- **Lecturer classification** - This criterion refers to the teaching expertise of lecturers in various disciplines or fields.
- **Current Teaching Status** - This criterion refers to the current credit and type of current program offered.
- **Teaching Load Requirements** - This criterion highlights the number of courses and classes required for a particular semester.

Findings & Discussion..
• **System Development Phase:**
  
  ~The Prototype of Workload Distribution System (e-WLOAD)~

• Three main menus, namely *Lecturers, Courses,* and *Schedules* menus.

• The *Lecturers* and *Courses* menus, are management menus that carry out the manipulation functions of lecturers’ general data and coursework, such as creating, accessing, deleting, and updating information.

• The *Schedules* menu, has a key component that assigns lecturers with teaching assignments based on several distribution criteria.

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**Findings & Discussion..**
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A snapshot of the Courses Menu
Findings & Discussion..

• Testing Phase:
  ~ Functionality Test of Workload Distribution System (e-WLOAD)

  • which indicated the prototype had fulfilled all system requirements successfully.
  • Prototype Test, which were participated by the dean, head of department, assistant registrar
    and two lecturers, were done based on functionalities listed in System Requirement Diagram.
## Findings & Discussion

### System Requirement Diagram & Functionality Test Results

<table>
<thead>
<tr>
<th>Fungsi / Function</th>
<th>Keputusan / Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mendaftar masuk / Logging in</td>
<td>Lulus / Passed ✓</td>
</tr>
<tr>
<td>Menambah pensyarahan baru / Adding new lecturer</td>
<td>Lulus / Passed ✓</td>
</tr>
<tr>
<td>Memapar maklumat pensyarahan / Displaying lecturer's</td>
<td>Lulus / Passed ✓</td>
</tr>
<tr>
<td>information</td>
<td></td>
</tr>
<tr>
<td>Mengemaskini maklumat pensyarah / Updating lecturer's</td>
<td>Lulus / Passed ✓</td>
</tr>
<tr>
<td>information</td>
<td></td>
</tr>
<tr>
<td>Memadam maklumat pensyarah / Deleting lecturer’s</td>
<td>Lulus / Passed ✓</td>
</tr>
<tr>
<td>information</td>
<td></td>
</tr>
<tr>
<td>Menambah kursus baru / Adding a new course</td>
<td>Lulus / Passed ✓</td>
</tr>
<tr>
<td>Memapar maklumat kursus / Displaying the information</td>
<td>Lulus / Passed ✓</td>
</tr>
<tr>
<td>on a course</td>
<td></td>
</tr>
<tr>
<td>Mengemaskini maklumat kursus / Updating information on</td>
<td>Lulus / Passed ✓</td>
</tr>
<tr>
<td>a course</td>
<td></td>
</tr>
<tr>
<td>Memasukkan kursus ditawarkan / Entering offered courses</td>
<td>Lulus / Passed ✓</td>
</tr>
<tr>
<td>Menjana jadual pensyarah / Generating lecturer’s</td>
<td>Lulus / Passed ✓</td>
</tr>
<tr>
<td>schedule</td>
<td></td>
</tr>
<tr>
<td>Mendaftar keluar / Logging out</td>
<td>Lulus / Passed ✓</td>
</tr>
</tbody>
</table>
• The Use of e-WLOAD
~ solving complex human resources management issues;
~ provide greater satisfaction for lecturers through the distribution of courses according to their expertise and experience with suitable, fair average credit load per lecturer.
~ lecturers will surely be able to teach more effectively as they will have sufficient time to prepare their lectures and attend to students’ needs.
~ having additional time can help them focus on other academic responsibilities, namely research, consultation, and publication.

Thus, e-WLOAD

should be featured as another important tool in existing management’s suite of applications to help administrative officials distribute teaching workloads that are acceptable to all.

Conclusion.. e - Workload
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Sintok: Universiti Utara Malaysia.


That’s all. Thank you ..

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