PREVENTION THROUGH DESIGN: ARCHITECTURE STUDENT COGNIZANCE

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Issues

- Accident statistics indicate a still high accident rate in the Malaysian construction industry, which means that the industry is one of the most critical industries needing a comprehensive and rapid revision of the existing construction safety practices.
- As an initiative to reduce the rate, Department of Occupational Safety and Health (DOSH) introduced the guidelines in early 2017 in order to integrate the Prevention through Design (PtD).

<table>
<thead>
<tr>
<th>Year</th>
<th>Total of Accident</th>
<th>Total of fatalities in the construction industry</th>
<th>Percentages of fatalities in the construction industry (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>237</td>
<td>88</td>
<td>37.13</td>
</tr>
<tr>
<td>2016</td>
<td>222</td>
<td>91</td>
<td>41.00</td>
</tr>
<tr>
<td>2017</td>
<td>240</td>
<td>111</td>
<td>46.25</td>
</tr>
<tr>
<td>2018</td>
<td>232</td>
<td>118</td>
<td>50.86</td>
</tr>
<tr>
<td>2019</td>
<td>275</td>
<td>72</td>
<td>26.18</td>
</tr>
<tr>
<td>July 2020</td>
<td>137</td>
<td>35</td>
<td>25.55</td>
</tr>
</tbody>
</table>

Table 1. The Occupational Accidents Statistics by Sector from January until July 2020 (Reference: DOSH. Malaysia [4])

- Moreover, the absence of tertiary education related to PtD can easily lead to inadequate knowledge for future professionals to execute it effectively [5], [7], [14]–[16].
What is PtD?

- Prevention through design (PtD)
  - addressing safety and health issues by "designing out" hazards and minimizing residual risks [7].
  - it is a process that is incorporate hazard prevention in the design process, with an emphasis on maximising Occupational Safety and Health (OSH) over the lifecycle of a project [11].

Who is responsible?

- Ideally, all designers should already been cultured with design risk prevention before any commencement of structure begins [5].
- The targeting group of PtD education awareness was
  - The higher education level, including the lecturers and students
  - And also practising designers in the industry and safety professionals.

- In designing buildings that are not only safe to operate but also safe to build, designers have to be responsive [11].
Research Aim

- The purpose of this research is to get constructive feedback on prevention through design (PtD) concept and its awareness among architecture students of Universiti Teknologi MARA, Perak branch, Campus Seri Iskandar, Perak.

Instrument

- The questionnaire was built on the basis of previous literature review on the understanding of PtD concept that allows respondents to address all three sections.

  - Section A was designed to identify the attentiveness on PtD.
  - Section B focuses on the significance of applying PtD.
  - Section C aims to present values of the potential PtD application in future.

Sample Population

- A 60 respondents were selected among semester 5 to semester 8 architecture students of Universiti Teknologi MARA, Perak branch, Campus Seri Iskandar, Perak.
Section A
As shown in Table 2, it’s shown that 50 respondents are aware of the PtD concept. A positive indication of the results enhances the potential of PtD concept later to be included as part of the design brief.

Table 2. Section A : Attentiveness on Prevention Through Design Overview.

<table>
<thead>
<tr>
<th>N</th>
<th>Valid</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>3.72</td>
<td>4.12</td>
</tr>
</tbody>
</table>

Section B
As student response as shown in Table 3, found this is to be an important idea for improving occupational health and safety during the design stage. The development of adequate resources for this assistance is great for students in order to recognize hazards and develop optimal designs during learning time.

Table 3. Section B : Significance on Prevention Through Design Application.

<table>
<thead>
<tr>
<th>N</th>
<th>Valid</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>4.12</td>
<td>4.15</td>
</tr>
<tr>
<td>60</td>
<td>4.42</td>
<td>4.00</td>
</tr>
<tr>
<td>60</td>
<td>3.77</td>
<td>3.77</td>
</tr>
</tbody>
</table>
Section C

Although students were aware of PtD, many of them pointed out these concepts are not included in the specific course content, and as a result, they are not considered a priority.

<table>
<thead>
<tr>
<th>Would you apply in your design if you know what is PtD all about?</th>
<th>Do you prefer to design something safe, easy to build and less risk of injuries or not?</th>
<th>Do you think that your surrounding working place are design in a good design?</th>
<th>In your department, is enough attention paid to preventing accident?</th>
<th>Are there sufficient opportunities to gain further training in Prevention Through Design (PTD)?</th>
<th>Do you think that your working environment need to be improve to become safety and health design?</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Valid</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Mean</td>
<td>4.48</td>
<td>4.28</td>
<td>3.40</td>
<td>3.83</td>
<td>4.17</td>
</tr>
</tbody>
</table>

Table 4. Section C : Potential of Prevention Through Design Application.

Despite the lack of PtD knowledge as well as the awareness, this paper shows the extent to which the knowledge of safety and health is encouraged to be promoted during the undergraduate programme.
This paper inferred that

- While students were aware of PtD, the knowledge of safety and health is inadequate and should be tenaciously fostered in undergraduate programme.
- The students should be given the opportunities to gain more insight and exposure in real practice and situation
- The scholastic intervention should be planned and structured thoroughly before the implementation began

To improve Architecture students’ cognizance

- Through the use of different modes of teaching, such as:-
  - pedagogical approach
  - serious gaming and simulations
  - massive open online courses (MOOC)
  - lesson learned from real case studies

  - Extensive span of comprehension from the educator to accentuate PtD to students exclusively on:-
    - technical understanding of construction
    - the capability to identify and mitigate all types of hazards in all project life-cycle
    - knowledge on any pertinent acts, standards, regulations, codes, laws and liability
REFERENCES


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