



Cawangan Kedah
Kampus Sungai Petani

Faculty of Administrative
Science and Policy Studies

i-SPIKE 2021

Leading An Artificial Innovation In Knowledge, Education And Design

i-SPIKE 2021 INTERNATIONAL EXHIBITION & SYMPOSIUM E-PROCEEDINGS

<https://ispik2021.uitm.edu.my/>

e-ISBN 978-967-2948-20-9

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Copy Editors : Azni Syafena Andin Salmat, Syazliyati Ibrahim, Asrol Hasan, Nor Zaini Zainal Abidin, Fatimah Norazami Abdullah, Chaleeda Som Sak, Nor Asni Syahriza Abu Hassan & Muhamad Khairul Anuar Zulkepli

Layout Editor : Asrol Hasan

Cover Design : Syahrini Shawalludin

Published by : Universiti Teknologi MARA Cawangan Kedah,
Kampus Merbok,
08400 Merbok,
Kedah,
Malaysia.

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THE CLAUSES SMM2 AT CONSTRUCTION SITE BOARD GAME FOR (WBLFF)

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ABSTRACT

The development of the Clauses Smm2 at Construction Site Board Game for (WBLFF) is as a platform to offer the new built environment students the overview of the proses taking off quantities for construction of works. Quantities of materials are materials that are measured in accordance with the Standard Method of Measurement of Building Works (SMM). This interactive game fulfils the syllabus related to construction courses of Measurement of Construction Works. Basically this game focuses on the knowledge of the elements of Work Below Lower Floor Finishes (WBLFF) which provides the information on the processes involved in the preparation of taking off quantities for element WBLFF from excavation of topsoil until the concrete works for ground slab. Taking off is taking the dimensions from architectural or structural drawings and entering the dimension with appropriate descriptions on taking off papers. It is well known that students have difficulty with theory related understanding, especially for the period of long discussions in lectures. As a result, the students will often fail to remember the information delivered during the lecture. The Clauses Smm2 at Construction Site Board Game for (WBLFF) which is consists of sixteen (16) major clauses developed from Malaysian Standard Method of Measurement of Building Works Second Edition from Excavation and Earthwork in Section D to Waterproofing and Asphalt work in Section K. The application of this game in a classroom provides a more conducive method for the students to improve their understanding of the steps taking off quantities for element Work Below Lower Floor Finishes (WBLFF) according to Malaysian Standard Method of Measurement of Building

Works Second Edition (SMM2). This board game suitable for a tutorial session with supervision by the lecturers. Through games, students are more motivated to learn, thus, improve their attention in class. Even more, this game serves as an indicator for the lecturer to verify the level of understanding of the students on the taking off quantities in measurement of construction knowledge.

Keywords: Construction Industry, Measurement of Works, Taking-off Quantities, Tool Indicator, Learning Process





THE STANDARD METHOD OF MEASUREMENT OF BUILDING WORKS (SMM2)

NO	CLAUSE	ITEM	UNIT
List of Work Below Lower Floor Finishes (WBLFF)			
1	D7	Excavation of Top soil	m ²
2	D.21	Deposition of top soil	m ³
3	D.12.4	Excavation to reduce level	m ³
4	D.22	Disposal of excavated material	m ³
5	D.12.7	Excavation for trench foundation	m ³
6	D.25	Filling to excavation	m ³
7	D.12.2	E.O excavation for excavating in rock (Provisional)	m ³
8	D.15	Disposal of surface water	Item
9	F.1.1 & 2	Concrete foundation	m ³
10	G.1.1	Brickwall	m ²
11	G.3.4	Projection to brickwall	m
12	G.28.1 & 2	Damp Proof Course (DPC) to brickwall	m/m ²
13	D.26	Hardcore	m ² /m ³
14	K.2.1 & 3	Damp Proof Membrane (DPM)	m ²
15	F.1.1 & 2	Concrete slab/bed	m ³
16	D.28	Hand packing hardcore	m

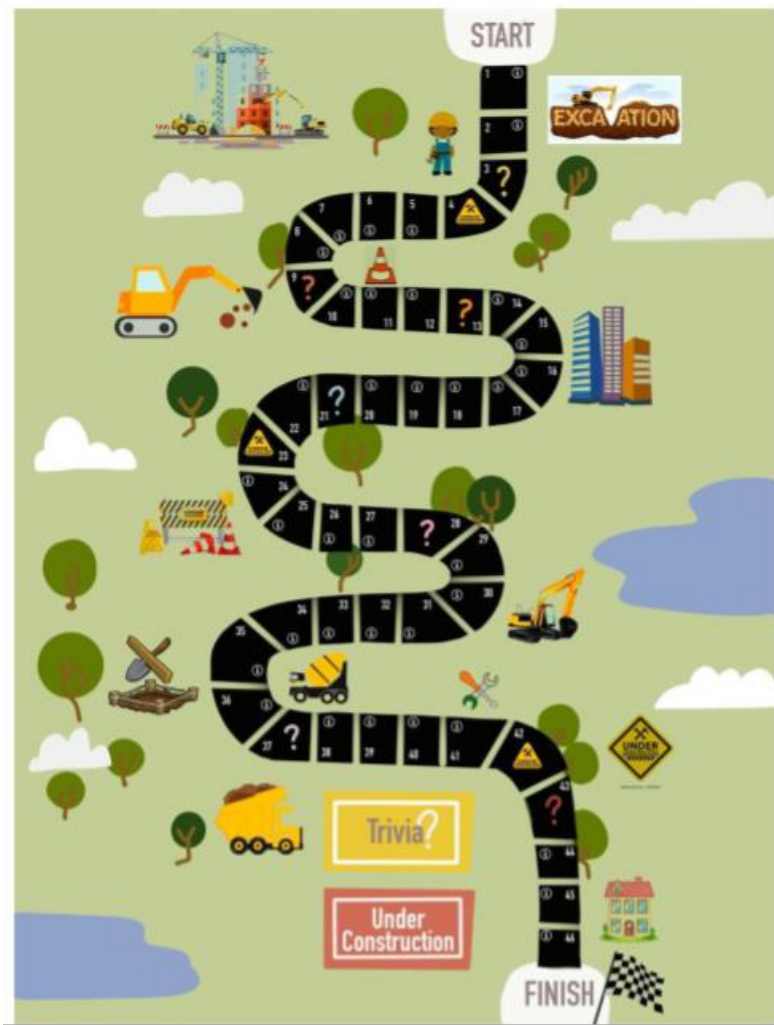
THE GAME AND METHODOLOGY

The game uses a top down technique board game, which follows the Work Below Lower Floor Finishes (WBLFF) excavation technique from top to bottom area. The rules of Clauses Smm2 at Construction Site Board Game for (WBLFF) as follows:

1. The game involves 2 - 5 players.
2. To start the game, the player rolls the dice and only can move if the number 1 stated at the dice.
3. During the game, the move is based on the number stated on the dice.
4. During the game, the players need to answer several questions about the knowledge and information of element Work Below Lower Floor Finishes (WBLFF) according to Malaysian Standard Method of Measurement of Building Works Second Edition (SMM2)
5. When the player stops at the TRIVIA **?**, the player needs to pick up a card from the TRIVIA **?** box cards and answer a question.
6. The correct answer entitles the player to roll the dice and the player can move according to the number stated at the dice.

7. If the player fails to provide the correct answer, the player needs to back a few steps according to the number stated at the dice.
8. If the player stops at the  box, the player will be sent to the UNDER CONSTRUCTION and miss one (1) turn.
9. After one (1) turn, to continue playing, the player can choose either to roll the dice and get 6 or answer a question from the TRIVIA  box cards.
10. Along the game, when the player stop at the box with symbol , the player can read the knowledge and information of element Work Below Lower Floor Finishes (WBLFF) according to (SMM2)
11. The first player that arrives at the flag  is the winner of the game.

THE CLAUSES SMM2 AT CONSTRUCTION SITE BOARD GAME



PROBLEM STATEMENT

Students normally having difficulties in understand theories by reading materials (printed or digital). This one-way method of learning requires the students to depends on books or reading materials for the information regarding the subjects. In the measurement of works subjects, the students are required to have high imagination to better understanding the subjects. Interactive learning is known for better knowledge transfer while providing an attractive learning experience by allowing the students to interact, argue, justify and able to compromise the information. Therefore, the incorporation of an interactive learning method for knowledge enhancement can be beneficial to build environment students.

NOVELTY

The number of game-based learning materials that can be used in the tertiary education level (focusing on a measurement subject) in Malaysia is limited. The WBLFF Game is designed to provide the theoretical information of the work below lower floor finish construction process interactively. This game has a higher potential to be used as an alternative to the typical teaching and learning experience – combining several subjects related to the built environment in a single platform, connecting the ideas and knowledge between subjects.

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The WBLFF Game has strong potential to be widely used by the lecturer as an indicator to verify the level of understanding of the students on the construction knowledge. It also serves as an alternative way of knowledge transfer for a tutorial session. This game can be potentially improved from time to time in line with the current syllabus. The board game has been in process registered with an IP from MyIPO.

FINDINGS

Research has shown that applying game-based learning method in the classroom has helped students to have a better understanding of the subjects (Holmes & Jamie, 2009). To make the learning process more interesting, the lecturers can incorporate at least one game a day into the key learning methods – teaching tool, learning tool, assessment strategy or classroom motivator. The integration of games in the classroom can increase the overall motivation of the students – students are more motivated to learn, pay attention and participate in the given tasks. Games also provide the students with an opportunity to become part of a team and take responsibility for their learning. Games can also be a great classroom management tool and helping to motivate the class.

CONCLUSIONS

By applying a variety of strategies in a game, students are capable to use their active memory

to resolve problems and increase their intellectual cognition. The stimulation of the brain due to strategies in a game can be a comprehensive brain training. The game also will educate the students about goals, adaptation, rules, interaction and problem-solving in a fun way, creative and full of passion.

ACKNOWLEDGEMENTS

Authors wished to acknowledge the financial assistance and encouragement received from The Management of Universiti Teknologi MARA Cawangan Sarawak.

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