

BOND KIT

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Abstract

BOND KIT is an innovation implemented to help students visualize the formation of chemical bonds, especially ionic and covalent bonds. The kit enables students to understand and visualize the transfer and sharing of electrons and identify metal and non-metal atoms, which helps in understanding the concept of bonding. The bond kit consists of electron rings with tiny holes, which are made from easily available materials such as mounting boards and beads. The Bond Kit also comes with a card game, which consists of questions ranging from easy to high-order thinking to be solved by students in groups. Twenty students were selected as respondents to evaluate the effectiveness of the Bond Kit. Two instruments were used to obtain data for the study. A pre-post question set and a 5-point Likert scale questionnaire were administered as a survey. The data obtained were analyzed using SPSS version 26. There is a significant increase in test scores after the use of Bond Kit. The survey shows students were highly motivated to use the Bond Kit to enhance their understanding. Bond Kit also received high appreciation from experienced chemistry teachers. The copyright of Bond Kit is registered with MyIPO (LY 2023P04611). The Bond Kit is further improvised by adding a special teacher demo kit ordered from the factory.

Keywords: Chemistry, Chemical bonds, Ionic and covalent, 21st century learning, fun learning

TEACHING AND LEARNING POSTER IDEAS

TALPI 2023

"TOWARDS INNOVATIVE GLOBAL TRENDS IN EDUCATION"

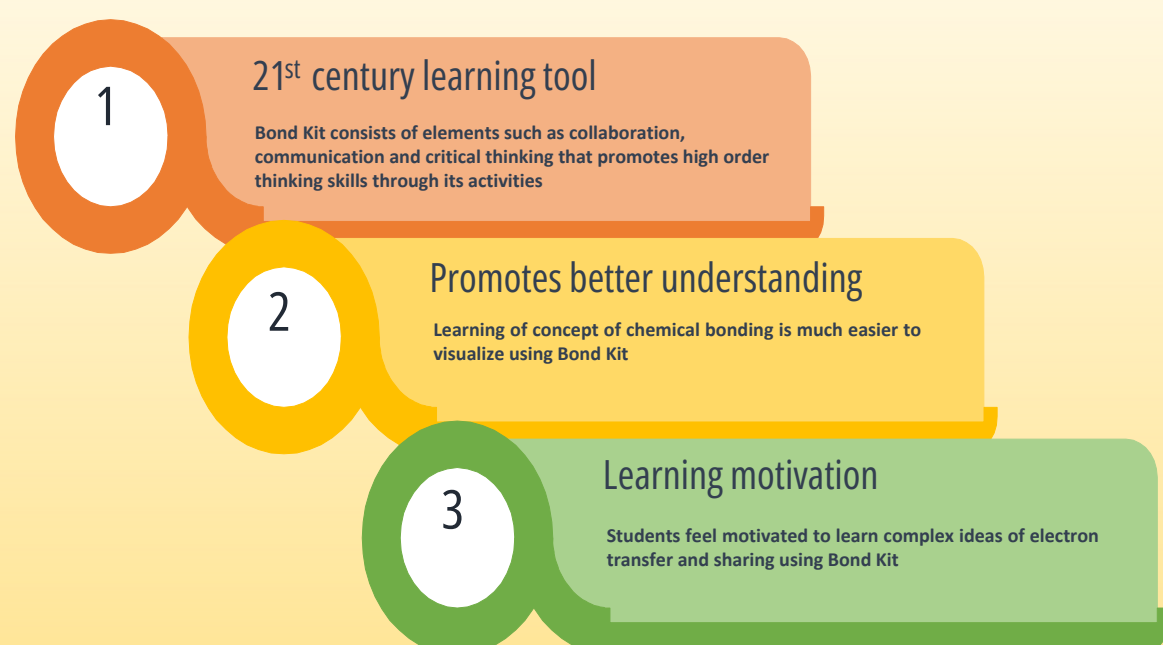
VIRTUAL COMPETITION

ABSTRACT

BOND KIT is an innovation implemented to help students to visualize the formation of chemical bonds especially ionic and covalent bonds. The kit enables students to understand and visualize the transfer and sharing of electrons, identify metal and non metal atoms, hence helps in understanding the concept of bonding. Bond Kit consists of electron rings with tiny holes which are made from easily available materials such as mounting board and beads. Bond Kit also comes with card game which consist of questions ranging from easy to high order thinking to be solved by students in groups. 20 students were selected as respondent to evaluate the effectiveness of the Bond Kit. Two instruments were used to obtain data for the study. A pre-post question set and 5 points Likert scale questionnaire were administered as survey. Data obtained were analyzed using SPSS v.26. There is a significant increase in test score after the usage of Bond Kit. The survey shows students were highly motivated in using the Bond Kit to enhance their understanding. Bond Kit also received high appreciation by experienced Chemistry teachers. The copyright of Bond Kit is registered with MyIPO (LY 2023P04611). Bond Kit is further improvised by adding a special teachers demo kit ordered from the factory.

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1.0 OBJECTIVES



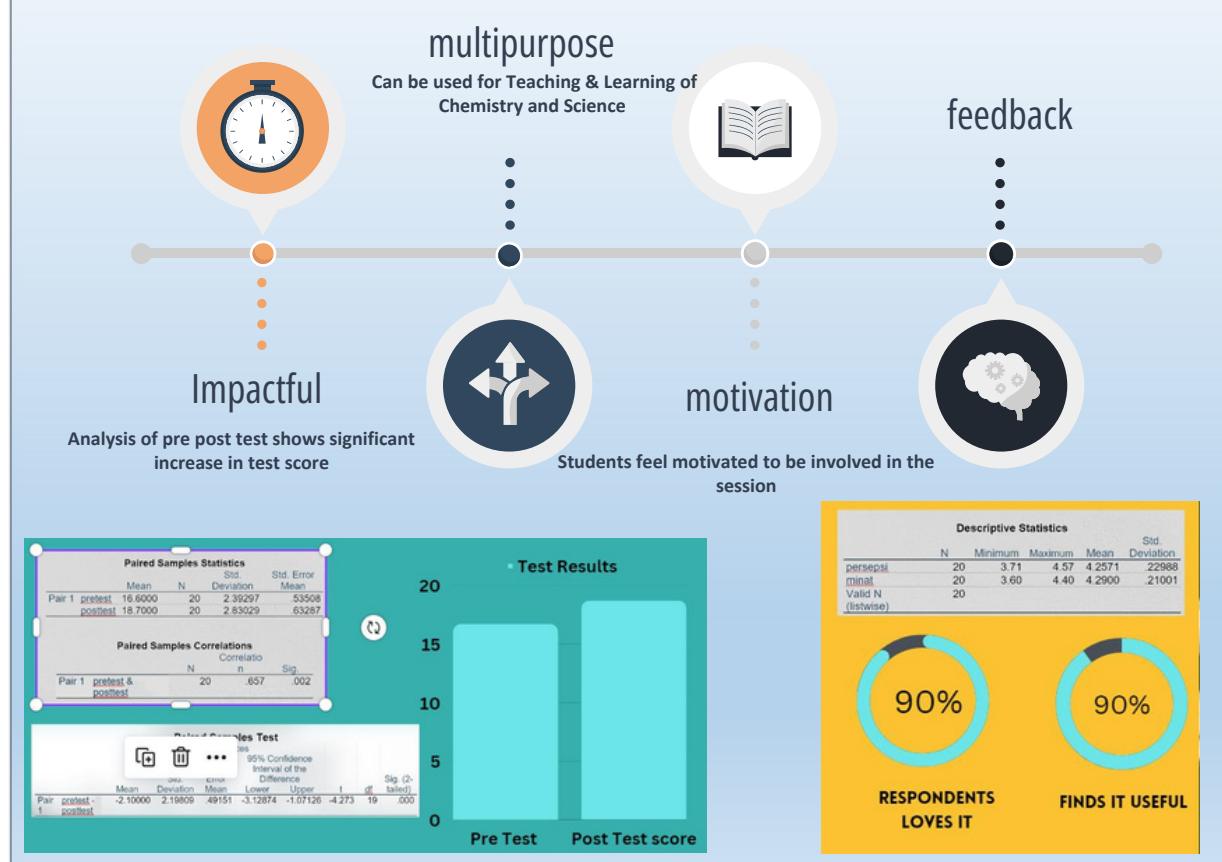
Bond Kit is designed to aid the learning of Chemical Bonds especially Ionic and Covalent bonds via hands on activity. Students are able to pick and transfer electrons from atoms to show the movement of electrons that forms ionic bond or share the electrons by overlapping the shells to show the formation of covalent bonds.

Few research does support the importance of a game based learning tool to help the students to visualize the formation of bonds better. The understanding of concept of bonding is rather weak among Form 4 students especially in drawing bond diagrams (Mizah& Hazniza, 2014).

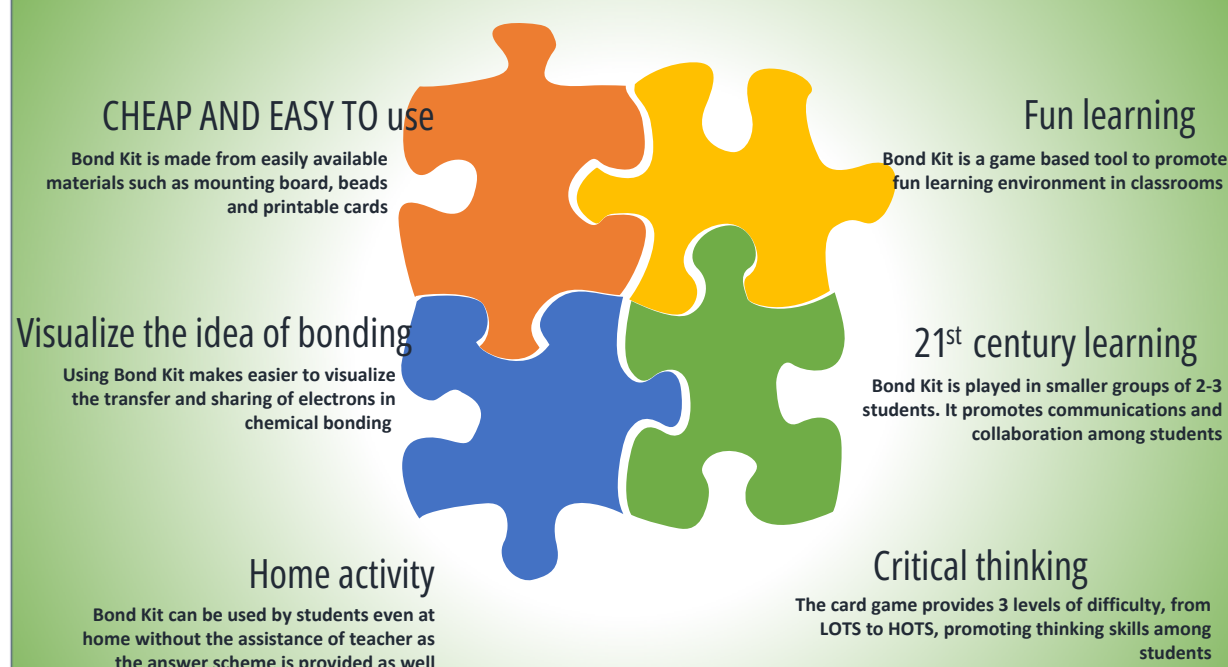
Anna (2012) mentioned that students face difficulties in drawing and identifying metal and non metal atom and further creates misconceptions in understanding chemical bonding.

Bond Kit can be used to from the basics of atomic structure to the formation of bonds by clearly distinguishing between metal and non metal elements through card games.

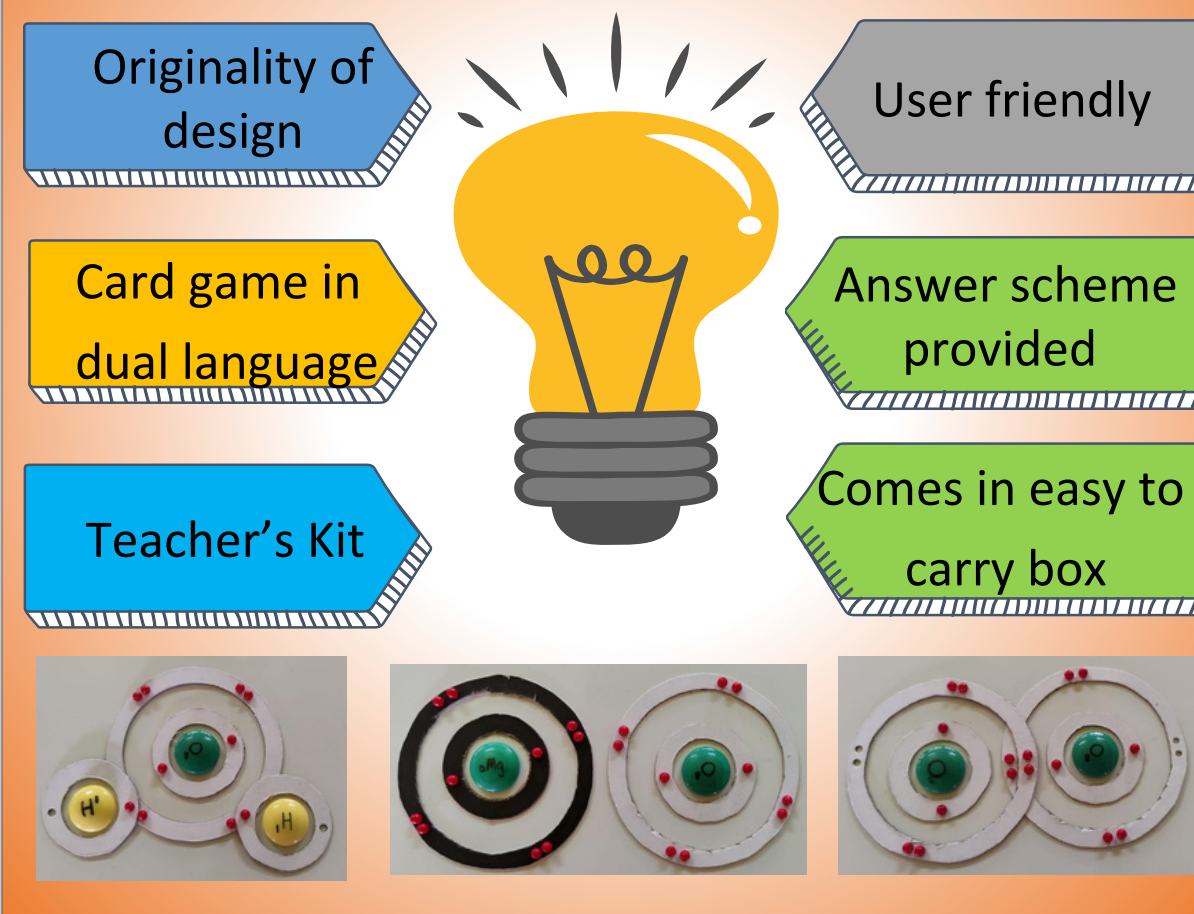
2.0 ADVANTAGES



3.0 USEFULNESS



4.0 NOVELTY



5.0 COMMERCIALISATION POTENTIAL

Bond Kit has vast potential to be commercialized as it has gained approval by winning the Platinum and Gold Award in the Innovation Competition for Secondary Schools in Kinta Utara District in 2022. The effectiveness of Bond Kit to be used as a teaching and learning tool especially for Chemistry and Science has been recognized by several experienced teachers. Bond Kit has registered copyright with MyIPO (LY 2023P04611).

6.0 INVENTORS

MR. VIGNESVARAN A/L SUPPIAH
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MRS. SHELLA DEVI A/P GOVINDARAJAN



BOND KIT VIDEO

Surat kami : 700-KPK (PRP.UP.1/20/1)
Tarikh : 20 Januari 2023



Prof. Madya Dr. Nur Hisham Ibrahim
Rektor
Universiti Teknologi MARA
Cawangan Perak

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Sekian, terima kasih.

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Saya yang menjalankan amanah,

SITI BASRIYAH SHAIK BAHARUDIN
Timbalan Ketua Pustakawan

nar

Setuju.

27.1.2023

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