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Pedagogical Implications of a Crossword Puzzle Mobile
Application for Language Learning

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English Vocabulary
Crosswords
by HKBU Language Centre

START

about   why this app?

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Outline

- Identify the significance of vocabulary acquisition and learning as well as the pedagogical implications of a crossword puzzle mobile app for teaching vocabulary to students for language learning;

- Describe how the English vocabulary crossword mobile app is designed as a vehicle for accelerating the process of learning vocabulary terms for language learning;

- Explain the theoretical foundations of learning and cognitive techniques for game-based apps, as a means of providing a learning experience that is individualized and motivational;

- Examine the Crossword Puzzle App design considerations for vocabulary learning that provides contextualized, authentic learning opportunities and engages students in tasks where they use words to communicate in meaningful ways;

Can a vocabulary game-based application facilitate English vocabulary building for students who consider English as their second language?

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Background

- Technology is continually advancing and this change into the educational realm is generating unique opportunities for enriched learning that is characterized as mobile and ubiquitous learning;

- Educational game-based apps may provide an approach to instruction in education that allows for greater learning outcomes;

- Trends in teaching and learning are rapidly moving in the direction of mobile learning, where growing portability allows for anytime and anywhere learning experiences;

- A significant aspect of smart phones is the availability of apps many of which can be downloaded at no charge or at very little additional cost to the user;

- These apps support and encourage ubiquitous learning through their relative ease of portability that allow for learning to take place, engaging in "anytime, anywhere" learning

- Mobile apps can be highly effective for use in language learning and can be a particularly powerful tool in the area of vocabulary development.

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Learning Through Crossword Puzzles

- A variety of games, such as crossword puzzles have been successfully used in the classroom and have proved that they can create a positive impact on student learning (Martinez & Parra, 2011);

- Crossword puzzles have also been presented as efficient teaching tools of definitions, terminology, vocabulary and spelling, thereby resulting in higher retention and memorization of facts (Moore & Dettlaff, 2005);

- Research has shown that crosswords not only have a positive effect on learning but also increase motivation and students' interest in the topic at hand (Crossman & Crossman, 1983);

- Crossword puzzles are associated with game playing and therefore they are less daunting for students as a learning tool.

- Past research studies assert that simple thematic puzzles are amongst the most productive instruments to support the process of student learning and that crosswords can be a compelling tool for reinforcing terminology and improving the learning of definitional items;

- Whisenand and Dunphy (2010) used crossword puzzles in an introductory information systems course and found that they assisted first year students in building and maintaining their vocabulary of technology related terms encountered in the course.

Significance of Vocabulary Acquisition and Learning

- The significance of learning vocabulary has long been underestimated. Instructors and educators have been experimenting with numerous vocabulary teaching methodologies with the objective of dealing with learning activities conducive to vocabulary acquisition;

- Vocabulary acquisition includes activities and methods that enable learners to learn words on their own – this activity comprises the active actions of acquiring, retaining, and recalling;

- These actions are further elucidated by the information-processing model proposed by Vockell (2010). The first stage, encoding, is when information is first put into memory; the second stage, storage, pertains to the methods used to retain the information; and the third, retrieval, comprises the recovery of the information from memory;

- Research indicates that the instruction of vocabulary acquisition techniques such as an analysis of word structures and context clues may meaningfully contribute to the success of vocabulary teaching;

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Vocabulary Learning Through Crossword Puzzles

- Students of English are required to acquire an extensive amount of vocabulary knowledge in order to be able to effectively communicate with their peers and instructors in educational, professional and social settings;

- The sheer volume of words to be grasped by students who study English as a second language can tend to be quite overwhelming;

- Puzzles support students to extend their vocabulary knowledge used to teach terminology, definitions, spelling, and pairing key concepts;

- Since students have to spell items correctly in order to complete the puzzle, they gain greater retention and memorization of vocabulary (Moore & Dettlaff, 2005);

- Typically, after students learn new words, they are inclined to forget those words as time passes. One approach to assist them in retaining new words is to expose them to those words repeatedly;

- Given the nature of crossword puzzles in the form of a mobile application, students can gain more practice to master new words they have just learned

Vocabulary Learning Through Crossword Puzzles (cont.)

- Research has shown that students immersed in a vocabulary-rich environment, who were assisted with word instruction and learning support strategies, ultimately developed more expansive vocabularies.

- However, the grasping of an adequate amount of vocabulary poses a formidable prospect for many Hong Kong local students. To form a grammatically correct and meaningful sentence, all the language components have to fall into place, the most prominent ones being vocabulary and grammar.

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Theoretical Foundations of Learning For Game-based Apps

The following theories lay the foundation for learning using mobile applications.

- Vygotsky's **Sociocultural Theory -** Zone of Proximal Development (*ZPD)* . When using an game-based app, for example, players are able to move beyond their current skill level with the game acting as a scaffold, suggesting that learners work within their prevailing state of instruction and development;

- **Social Learning Theory** (Albert Bandura) - the effect that motivation, attention and feedback can have on the user: Images and text encountered on a mobile app aid in remembering the content experienced. Based on the feedback from the game, the player's behaviour is modified and reproduces the correct responses for success.

- Thorndike's **Theory of Law and Effect** is best exemplified by trial and error learning. Using a mobile game-based app - is the repeated opportunities available to the learner to engage in a task or activity. If the strategy used is not successful and did not earn the most points, the player has the ability to try it again several times and continue to modify the original behaviours based upon the feedback received.

- **Game Theory** defines the main structure of a game by developing and providing various sequences of decisions and choices pre-programmed into the gaming structure that allow players to progress based upon their own actions. As the player progresses, his/her interactions within the game help him/her to advance into strategies that maximize the chances of success at attaining predetermined goals.
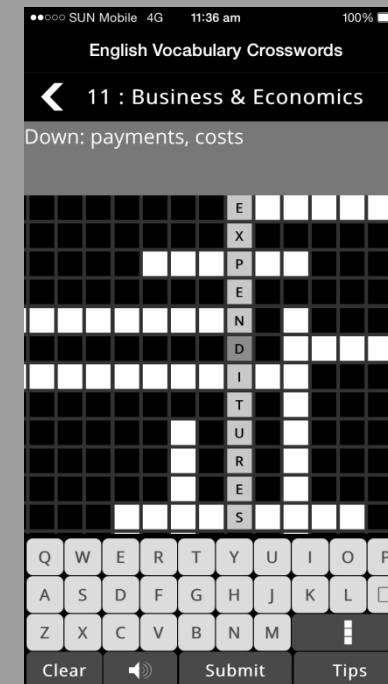
App Design Considerations for Vocabulary Learning

- The *English Vocabulary Crosswords* app designed and developed by the Resource Centre for Ubiquitous Learning & Integrated Pedagogy (ULIP) for the Language Centre is a game-based mobile app that permits users to review various English vocabulary terms, thereby, improving their English language skills.

- The app is implemented as both an iOS and Android app, and students are able to access this app by simply loading it on their smartphones, just as they do with all their other smartphone applications.

- The crossword vocabulary app serves a dual role. Firstly, the app provides new information (i.e., review of various vocabulary definitions) and in the other role it serves to test the information (i.e., deciphering the correct words).

- The app is specifically designed to allow users to achieve success by building up their existing vocabulary word bank on a variety of vocabulary topics such as people and ideas, law and society and arts and entertainment.

- The crossword exercises are comprised of a format in which the players are provided with the definitions of words. Learning the definitions of words can be a valid and practical way to increase their vocabulary and by the same token, players can learn the instances and contexts in which the words can be used.
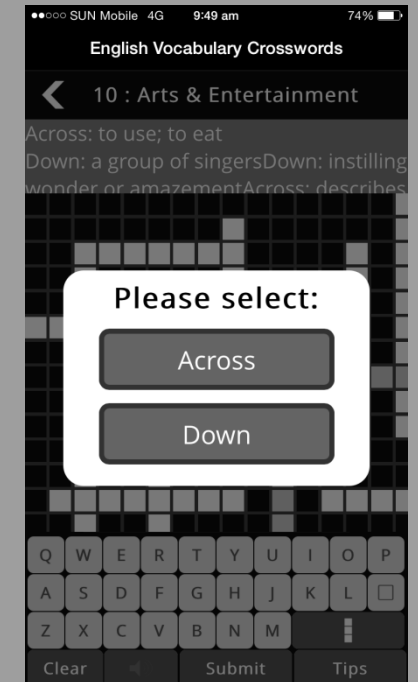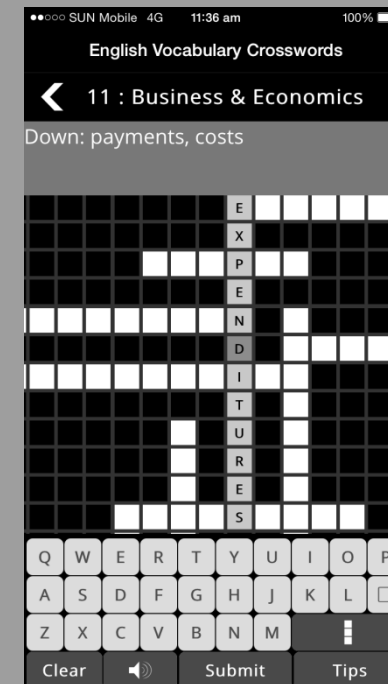
App Design Considerations for Vocabulary Learning (Cont.)

- The gamification element offers a degree of challenge that motivates students to attempt to solve the crossword games by making learning more exciting and rewarding;

- It also offers the opportunity for students to practice and repeat the sentence patterns and vocabulary, which in turn could assist in the improvement of the students' performance in English.

- The app is designed based upon the concept of mastery, meaning that in order to exhibit knowledge and understanding of a word, it must be correctly solved in the cross-word grid;

- This demonstrates that an immersive game-based app allows for active inquiry and exploration in a defined space.

- When developing their vocabulary, students benefit from an app that provides contextualized, authentic learning opportunities and engages them in tasks where they use words to communicate in meaningful ways.
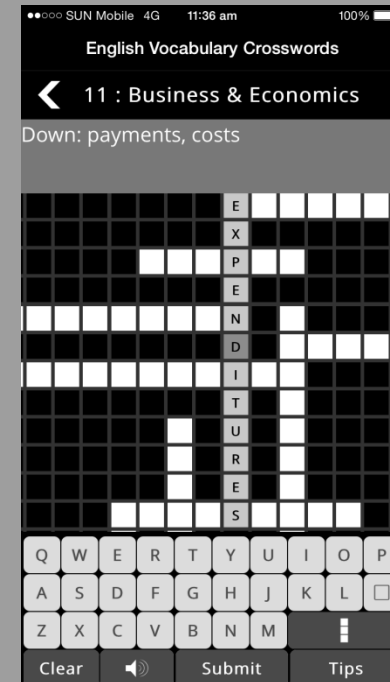
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App Design Considerations for Vocabulary Learning (Cont.)

- User-interface design is consistent in color scheme, font and layout. This assists a player by providing consistency in locating specific features and presenting only the required information without a barrage of other distracting items.

- Touchscreen with zoom function allows the player to react to what is displayed and as a result, control how it is displayed by zooming (i.e. expanding or shrinking the crossword grid).

- Hand-eye coordination also assists in the development of the skills required to reach the desired goal (Loftus & Loftus, 1983). Hence, the need to gather and maintain the player's attention through visual experiences and audio designs is also an important element in the design of this specific crossword app.

- App is also designed to allow players to listen to audio recordings of words pronounced by native English speakers, after solving each word by clicking on an audio icon to hear the correct pronunciation.

App Design Considerations for Vocabulary Learning (Cont.)

- Design - first format is linear, i.e., player after producing a certain response receives a reward, then progresses onto the next crossword clue;

- Second format involves branching – this is where the next crossword clues to be encountered will vary upon the action executed by the player, meaning that no two players will follow the exact same pathway through their learning experience;

- Based upon these two formats, the player can opt for a multitude of methods to make progress in the game, by making discerning choices based on individual strengths and learning styles (Gee, 2003).

- The design mechanisms that go into a game and provide reward through variability in level difficulty and scoring are developed based upon the player's cognitive properties;

- The use of rewards can increase motivation and the drive to do well in a game. An important feature of the design of the crossword app includes the use of rewards in which points are earned for correct responses.

- The reward feature inherent in the design of this app not only provides instructive information immediately to the player regarding a correct answer, but also allows the player to appropriately acknowledge a correct response.
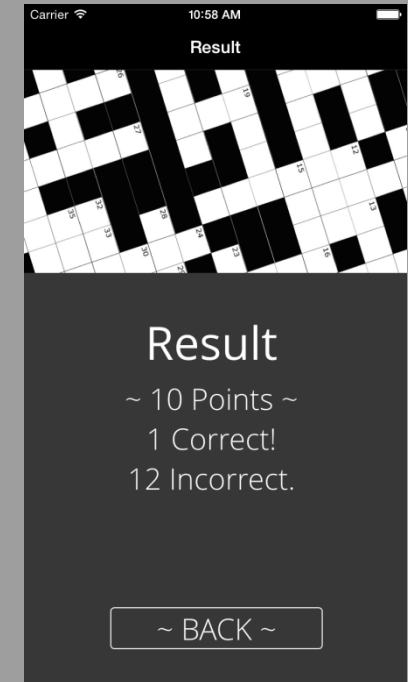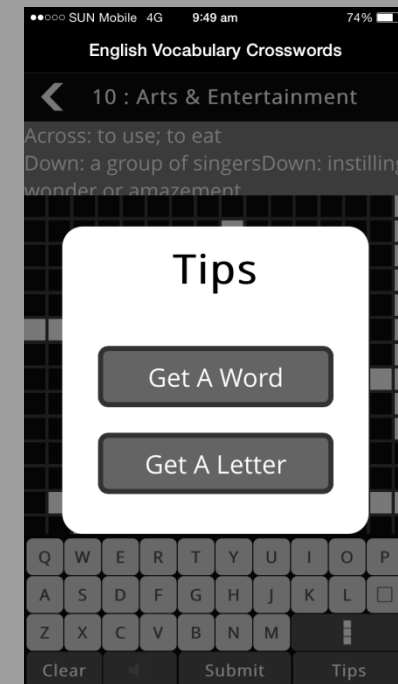
Conclusion

- Apps, that are available for both smart phones and tablets can be an effective tool for supporting vocabulary development among learners for whom English is a second language.

- Learning vocabulary through a crossword app is one method of improving students' vocabulary.

- From a pedagogical perspective, the crossword app has the capability to move at the individual's pace and can be an instrumental learning tool when learning certain curricular concepts, such as vocabulary.

- Typically, the crossword app affords players a chance to play at their own level, at their own pace and during their own time.

- Using the app to acquire vocabulary may also create an approach to extending the classroom time to an unlimited number of hours with almost endless geographical boundaries.

- When students are engaged in a game-based app such as this, they are not only developing and reinforcing their cognitive skills, but they are also making constantly connections between text, images and sound.

- Further, the use of the crossword apps could be extended to other subjects such as music, medicine and geography, among others.

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Questions?

Thank you!

I still have questions about...

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