INTEGRATION OF VISUAL LEARNING WITH THE TRADITIONAL TEACHING FOR PRIMARY SCHOOL STUDENTS EARLY STAGES

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ABSTRACT

Investing in new technologies and devices is necessary to support traditional teaching methods and provide them with modern, easy, and attractive approaches. Modernizing the teaching methods uses visual learning to help students take advantage of hi-tech devices, mobile phones, or computers as educational tools and not only as entertaining devices. As the crisis of COVID-19 has struck globally, quarantine has introduced electronic learning and has become the primary method of teaching students. Therefore, this paper explores integrating traditional education with online visual learning for first-grade students using a three-step learning cycle. Accordingly, the paper proposes the design and development process of a mobile learning application mainly suitable for children aged four to six. The ADDIE (Analysis, Design, Development, Implementation, Evaluation) model is considered a systematic method for the education design process and provides a procedural framework that ensures that educational products are effective and efficient in achieving goals. It was adopted in creating this application. The article presents the details of every stage of the designing and developing process.

1. INTRODUCTION

Many parents believe that technology and gadgets are essential for the development of their children. As a result of social isolation and quarantine, the average usage of smartphone screen time has doubled in children [1]. Most young children in the minority, low-income, urban communities had mobile devices by the time they were four. Early adoption, regular and autonomous use, and media multitasking are all indicated by usage patterns [1]. Harrison Poll claimed that seven out of ten parents reported that their children, aged five to seventeen, have increased screen usage by up to 60%. In addition, he stated that children spend an additional hour and a half daily on digital screens [2]. Due to the pandemic of COVID-19, students were encouraged to keep their physical distance from each other and attend school online if possible.

Distant learning became an essential learning strategy in comparison to traditional methods of teaching. This type of education was highly successful for secondary and higher education students. However, it is difficult when used for children and those with special needs [10]. The studies highlight that while there is a downfall in primary school education quality, the quality of education for secondary and colleges has become successful [3]. This could be why visual learning was introduced in primary school education. Visual learning is becoming an increasingly popular learning method for different educational stages. The visual learning environment provides an intriguing opportunity to enhance students' learning experience by offering interactive and personalized content through technical tools [4]. Interactive content is essential to offer developed cognitive responses from students. On the other hand, customized content allows students to develop a sense of independence during their learning process [4] [5].

2. CHALLENGES AND MOTIVATIONS

Many factors help in developing the abilities of children, which include cognition and the environment of the child [12]. The cognitive factor can be considered the basis because most learning activities are related to the problems of thinking, acceptance, memorization, and language development is crucial because it is a tool of communication with their environment. Technologies are developing rapidly, and the

Internet has become available at hand and an affordable price. It was necessary to provide a method to help children of different levels to continue studying in the event of the study being stopped or forced distance due to circumstances that may affect society as a whole. This will help the students to keep pace with their studying without delay for any reason. The primary stage can be considered a golden stage for building a correct foundation for an educated and motivated student for NHL [6]. To support this thing at an early stage, it is necessary to develop the linguistic aspects, especially the mother tongue, as it helps in good communication, invading the Corona epidemic and forcing students to stay at home and move away from traditional means of education. It became necessary to build educational means. Visually, it provides students, teachers, and parents with simplified communication focused on the curricula. It is essential to be designed and written in an exciting way and tools that can be considered modern and attractive, such as mobile phones and iPods, as an alternative and complementary means to traditional learning methods [6].

Visual learning is one of the "most exciting and stimulating methods." There is no separation between vision and thinking in terms of importance in teaching and learning [28]. They are of one process. It can be considered the first years of primary school life to be the golden child development of cognitive skills due to the widespread use of mobile and computer applications. It is scientifically proven that 75% of the information taught in visual methods for children is sustained and remains in their long-term memory, and the mind can store data and cannot be erased if its source is an image [7]. Emotions play an essential role in visual learning. The human brain can be referred to as memories that last for a long time in memory. Therefore, the student gains a better understanding [4] [8]. Visual learning enhances student interest, comprehension, and retention of information with great results that improve concentration levels [8].

Therefore, it is necessary to create an application that has two qualities together, education and entertainment, accurately to gain high development knowledge of students through integrating traditional methods (students' attendance in the classroom) and modern methods (off/online education teaching distance). Like other countries, Iraq, including the Kurdistan region in the north, has stopped studying due to the Covid-19 pandemic. Parents are facing difficulty motivating their children to learn remotely for several reasons. Firstly, it is a new teaching method unaccustomed to students and parents alike. Secondly, parents struggle to push the child to sit and focus for a while that is not short on a subject. It may be boring for the kid who is not interested in studying. Thirdly, the parents might be busy or not well versed in using modern devices such as computers or mobile phones. Accordingly, it has become necessary to find an alternative way to maintain the continuity of the study according to the curriculum. Interestingly and understandably, our application depends on this idea.

This paper presents a simple application to explain the idea of visual learning to the student in the first stage of primary school to teach the Kurdish language in the Kurdistan region of northern Iraq, based on visual learning concepts and using react technology platform.

3. LITERATURE REVIEW

Reading and watching can develop students' skills at different academic levels. The training to acquire knowledge through watching has become necessary to provide much knowledge. More research has dealt with developing students' competency, especially after the Internet and social media spread. This section summarizes some studies showing a growing interest in using visual concepts in teaching and learning.

Raiyn introduced a new concept to increase students' analytical thinking skills based on a visual learning strategy [4]. His system depended on three components: a teacher, a student, and a learning process in primary and middle schools. The teacher monitors the learning process using visual tools to improve the classroom's higher-order thinking (HOT) skills. Then the SWOT model was used to evaluate students' performance and ability to make decisions, whether due to the effects of visual learning [4]. In contrast, blended learning with social networking co-learning and knowledge cocreation support had the highest impact on the learning process, as it has been approved in [7]. It has been observed that the quality of learning and teaching experience through physical participation was more effective in a survey conducted on a group of secondary school students for learning to be

creative and exploratory [7]. The idea of visual learning is combined with traditional learning. Learners are open to accessing available resources as well as making them.

Munastiwi in [9] focused on the obstacles children, parents, and teachers faced. The research gives excellent and new ideas about findings and essential steps to solve problems facing the learning process through visual learning [9]. At the same time, Jose *et al.* (2021) focused on the visual memory of the human being, whether standard or with special needs, and the need to strengthen this memory using visual education, where the child can retain visual information for a long time. On the other hand, a child with autism can be helped by creating a visual representation, which enhances his learning abilities [10]. Saputra *et al.* (2020) mentioned that the first step in designing any visual educational process is creating a storyboard through sketches of images arranged in sequence and adjusted to the script. Story ideas can be conveyed through visualization and imagination, thus helping the child explore knowledge [6]. In addition, the authors in [11] posed a question about how to translate the language of cinema into the classroom by building a storyboard, script, and relationships. Students print models to prepare a three-page documentary film. They discussed all issues via the Internet to determine who is the producer, director, and photographer and how to produce images, link them together, and then download them to students' smartphones. Students could pair in teams or carry out the production of their projects individually on their smartphones, etc...[11]. Students became active participants in visual literacy, crafting image-based narratives rooted in scholarly research. They could also engage with visual content on social media more critically. The departure students began asking questions about the processes that led to content creation and the intent behind them. They became conscious of implicit biases and political agendas and embedded them to design and prepare a learning environment suitable for individual differences.

Burak *et al.* (2021) determined the dominant learning styles of primary school students and analyzed the relationships between learning styles and different variables [12]. They obtained their results by verifying and getting the data from 149 students depending on confirmatory factor analysis (CFA). A valid and reliable measurement tool was developed to determine the learning styles of 8- 11-year-old students in primary schools in 2021[12].

Çalışkan (2019), in his study, compared the conventional methods [13]. Many participants said that employing audiovisual resources increased their attention and interest in the session and made the vocabulary more persistent. Another finding of this study is the ineffectiveness of the conventional method of vocabulary instruction [13]. Results from quantitative and qualitative research indicate that secondary school pupils struggle with traditional vocabulary learning. These methods can be replaced in the classroom with more creative strategies and visual aids like posters, films, flashcards, etc.

The authors of [14] described the use of audio-visual learning media in the teaching and learning process of elementary school students depending on the use of audio-visual media in the classroom. This approach uses a qualitative approach. They used data collection techniques through observation, interviews, and documentation studies. Then an analysis of data elicits data that attracts students to understand the material delivered during the learning process through the efficient time required by the teacher to explain more plans. Student responses to audiovisual utilization with the good category was 78%. The student may find it challenging to understand the study technique used. This research [15] focused on teaching strategies, summarized them in either the audio-visual or kinesthetic learning style, and focused on the student's reading ability. One of the research results is that the first method raised the student's comprehension level and then his reading ability by 75%, meaning that its effect was positive.

In comparison, the study in [16] found that the main learning channels during the pandemic were television stations, school on-air via radio programs, virtual learning, and private teaching. The findings revealed that respondents had no preference for specific perceptual learning styles but embraced different learning channels employed. This paper adopted the idea of using media during future crises. Diverse learning platforms, channels, and digital media employed for learning should cater to students' learning styles: visual, auditory, tactile, kinesthetic, group, and individual.

Providing a timely environment for learning at hand provides audiovisual learning. The structure must be clearly stated in the framework

in the design phase. This framework includes the sketches and storyboards of the application. They used two buttons to show and hear the sentences. The author [17] claims that children need to be given the right stimulus so that the child's growth and development are to the maximum. One inspiration that can be given for cognitive development and language in early childhood is by providing an exciting medium because, in the development of early childhood, the way of thinking requires visualization of abstract thought. The author research designed the application for learning English while testing the application using ISO 9126, he obtained functionality test results with a value of 100%, and the usability test results obtained a value of 91.11%. Many kinds of research dealt with the idea of integrating visual learning with traditional learning and building auxiliary applications for different academic stages and materials, especially for the late grades of primary, secondary, or even college stages, without linking them directly to the curricula, but only supporting it, as in [18], [19], [20], [21], [22].

Our application introduces Kurdish language curricula for the first stage, an essential visual learning technique for teaching the native language.

4. METHODOLOGY

The application presented in this paper considered the Kurdish language to be the educational topic to implement the effect of visual learning. This is because it is planned to be implemented in the primary schools in Duhok provenience. The application relies on the educational curriculum. The idea is based on the curriculum for the first primary stage of the Kurdish language, where the data is collected (linguistic & visual). Then built into an application using react native that builds based on visual learning and then applied to three steps (Fig. 1).
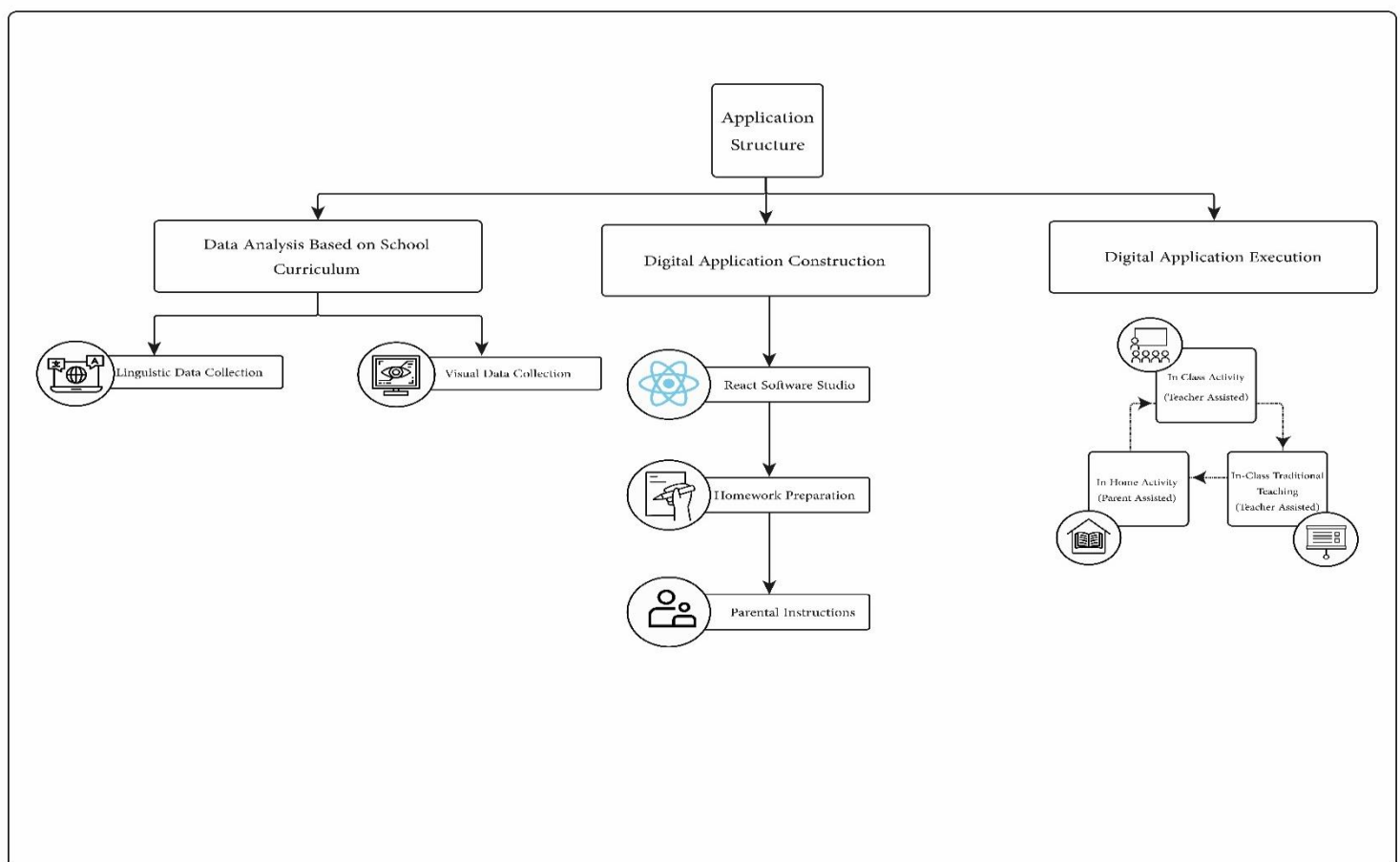

Fig. (1): application structure

The application is built on the concept of integrating visual education by using contemporary technologies within children's grasp and changing the device from entertainment to educational, as well as the harmony between traditional and visual education. It entails adapting the information from the textbook first, putting it in the proper format for the application, and making it more obvious. Secondly, by converting them into interactive interfaces, whether they are on the device or written in paper form as worksheets under it reacts studio environment, sometimes referred to as RN, is a well-liked JavaScript-based mobile app framework that enables programmers to create mobile apps for iOS and Android that are natively rendered. Using the same codebase, the framework enables him to construct applications for various platforms. The last stage of application design entails getting it ready for usage by the intended audience, be it a student, family, or teacher, by having them interact with the app at home or school and sharing it with them all to achieve optimal achievements.

5. IMPLEMENTATION AND DISCUSSION

Based on the ADDIE paradigm, our application follows a basic, time-tested process that instructional designers and training developers typically employ (Fig. 2). It provides a dynamic, adaptable framework for creating training and performance support tools [23]. This model has the following five stages: each stage is crucial to the next
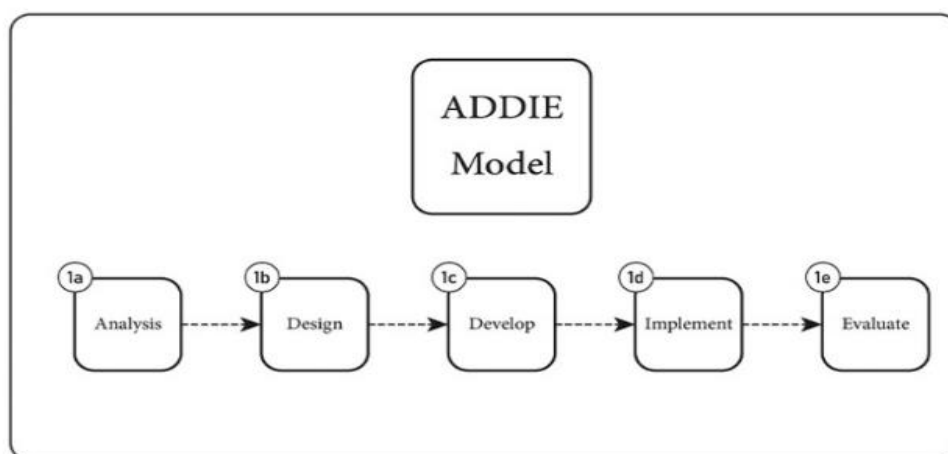

Fig. (2): ADDIE Model

5.1. Analysis phase (1a)

Building a robust educational application that delivers the desired result and lays the proper groundwork for a critical time of the child's life begins with the analysis phase. Since the student in his first year is active, clear-minded, and eager to learn, the application level must satisfy his aspirations and aid his growth and development. This phase consists of collecting data as shown in (Fig. 3)
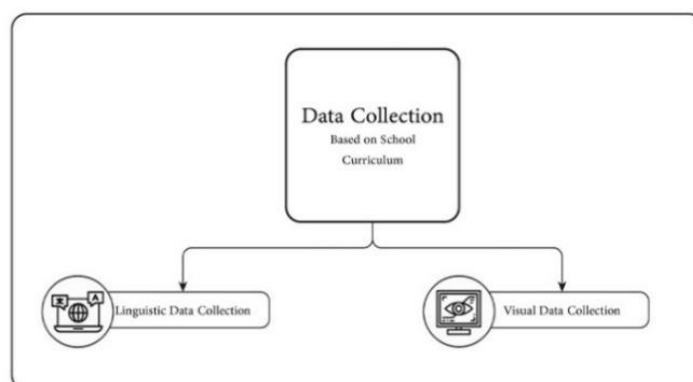
Fig. (3): Data Collection

The alphabet letters, words, sentences, and accompanying images were taken from the Kurdish language curriculum for the first primary stage in the Kurdistan area of northern Iraq, as indicated in (Fi g. 4). The Arabic and English alphabets are not significantly different from the Kurdish letters, as illustrated in (Fig. 5). However, they increase with some letters that make them stand out from others. Each letter was extracted by adding pictures for each word present and then explained in a simplified manner using sound effects (Fig. 6).

Fig. 4 Kurdish book 1st stage primary school


Fig. 5 Kurdish alphabetic letters

Fig. (6|**): images explanation of Kurdish letters**

5.2. Design phase (1b)

The goal of the curriculum is learning and training for the sake of memorization. Therefore, the purpose of the application must be parallel to traditional learning and knowledge acquisition in a modern style [24]. This application demonstrates how knowledge and abilities move from theory to practice (Fig. 7).
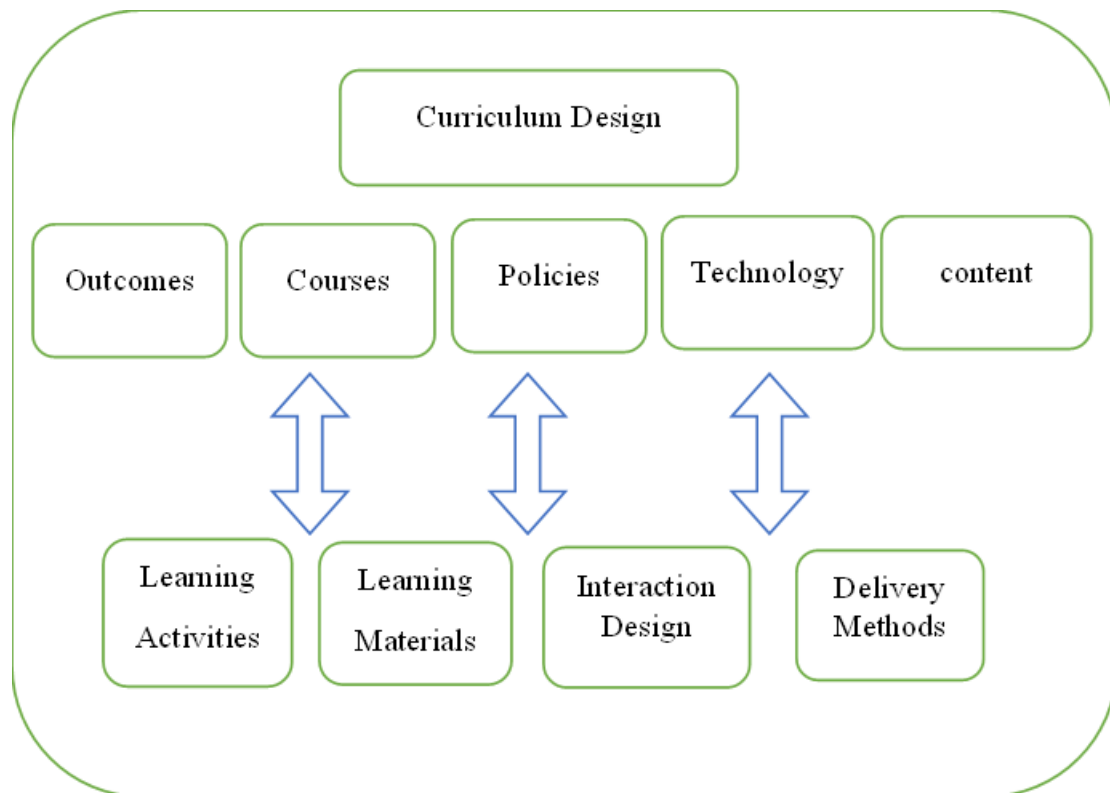
Fig. (7): Diagram Illustrating Elements of Curriculum Design vs. Instructional Design [24]

Learning objectives, assessment tools, activities, content, subject matter analysis, lesson preparation, and media choice are all covered in the design process. The design process ought to be methodical and precise. Considering the idea of exciting the child, grabbing his attention, and returning to the lesson in case his mind wanders for some reason, take into account the assortment of factors that make up the curriculum, such as the content, connections, homework, and other obligations, as well as the degree to which the child absorbs them. The application will be developed, structured, and/or presented with the aid of digital or analog technologies to assist in the delivery, creation, or assessment of the curriculum [25].

5.3. Developing phase (1c)

The core of the content has already been decided in the last phase. It necessary to add is a level of detail. The application has become more effective because knowledgeable and practical authorities create the scientific content. In order to have an interesting and efficient application, as explained below.

Requirement software

React Native is an open-source JavaScript framework designed to build apps on multiple platforms like iOS, Android, and web applications, utilizing the same code base [25]. It is based on React, bringing all its glory to mobile app development. React Native uses the concept of "bridge," which allows for asynchronous communication between the JavaScript and Native elements - the bridge concept lies at the heart of React Native's flexibility. Native and JavaScript elements are entirely different technologies, but they can communicate. (Fig. 8)
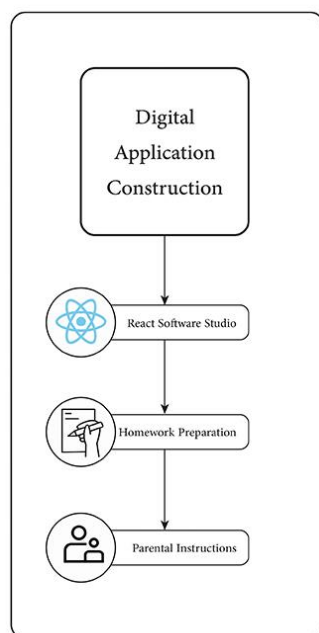
Fig. (8): Digital application construction

Add effects

Adding sound to the program is essential in increasing the child's ability to learn, interact with the application, and receive information in more than one sense. React Provides many distinct sound effects and the ability to edit and modify the audio with high quality. Also, react native changes the sound to different and fun sounds close to the child to interact with. The practical development of multiple platforms at once is the most significant and vital advantage of React Native [26]. Utilizing the same code base for different platforms carries other benefits: faster development and time, more accessible and cheaper maintenance, and a smoother onboarding process for new developers joining the project [26]
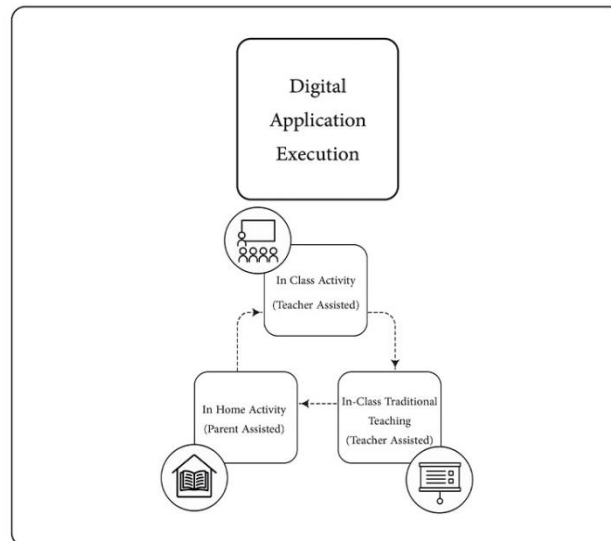
Application interfaces.

The program contains three primary sorts of interfaces: interfaces for letters, their sounds, and their locations in words. Activities interfaces comprise exercises and assignments delivered to students online and worksheets supplied in classrooms for reviewing letters and learning how to write (Fig. 10).

5.4. Implementing phase (digital application execution (1d))

It entails three steps, each of which builds upon the one before. The first level entails the parent helping the child at home, the second involves the instructor cooperating with the parent's online presence, and the third requires the student to be present in the classroom and engage in traditional teaching (Fig. 9).

Fig. (9): Digital application execution

The student learns through a variety of interfaces, where he is exposed to the audio-visual component simultaneously for the particular letter and its location in the word, whether it is at the beginning, middle, or end, and notices its shape in each location through incorporated differently within a few examples. This enables the child to learn the way the letter is written visually. Repetition is crucial in the second interface. The pupil is trained at this level to recognize and identify the letter's location within each word. If the student is able to locate it, they will get a confirmation and a response (happy face icon). If not, a noise and an emotion (such as sadness).

The following interface demonstrates to the student how to use these words in short sentences and indicates how a letter's shape changes by altering its color, as shown, for instance, at the interface's conclusion. Additionally, as a review, at the end of the interface, repeat these phrases with blanks that need to be filled in by the student using the new words. Regarding the student's attendance in class, worksheets are provided to teach the child how to write the letter, review the words and sentences that were previously given, then inquire of the student about the letter's presence in words printed on the worksheet and ask the student to come up with new words that contain this letter, with three buttons at the bottom of each interface, the student can move backward or frontward between the interfaces (Fig. 10).

Cooperative behavior develops through time and lessons, whether at home or school. The student launches the application from the classroom interface and tries to read the most recent or previous lesson by themselves. Like when he plays or watches his favorite movies regularly, an intelligent device can only utilize the kid's skill.

The main App interface	Choosing stage interface	Choosing subject interface	Choosing alphabet letter
Alphabet letter interface	Example of activity online	Example of activity1 worksheet	Example of activity2 worksheet

Fig. (10): Examples of interfaces & worksheets App

5.5. Evaluation (1e)

This application does not practice with an actual situation. As with any application model, some positive and negative aspects are expected to exist during its practical use. In this paper, these aspects have been defined and considered.

Positive aspect

From the sources mentioned earlier, it was noted that the possibility of using and building an application that helps raise the level of the student, especially if it is not possible to continue studying during crises. Following the student in an exciting and modern way helps the student get rid of the boredom or difficulty he may face if he relies on the traditional teaching method. The combination of this cycle provides an innovative way of educating first-grade students in a way that retains this information.

Negative aspect

Not all kids will be able to use E-learning since there are low-income families that have no access to the internet. Even though an application is developed to support E-Learning, it will not be accessible to every student area since there are people who are not exposed to the latest technological advancement. The demographics with less exposure to technology only gain knowledge and education from school [16]. It was necessary to create an application that has two qualities together, education and entertainment, accurately to gain high development knowledge of students through the integration of traditional methods (students' attendance in the classroom) and modern methods (off/online education teaching distance). In a case study, we chose to teach the Kurdish language for the first primary stage in which we relied on the educational curriculum for being the necessary need for the luck of such an application. Also, the Kurdish language is native and can be understood easily by the student and his parents if the student needs his parent's support.

The parents favored traditional learning in early childhood settings and typically held unfavorable views of the virtues and advantages of online education. Three main factors contributed to their reluctance to support children's online learning: the limitations of online learning, the lack of self-control in young children, and their lack of time and expertise in this area—moreover, the COVID-19 pandemic's negative effects. Our project aims to refute the notion that education has only beneficial impacts by demonstrating the negative repercussions.

Add a comparison with other work mentioned in Literature review section

The system in [4] depended on three components: a teacher, a student, and a learning process in primary school. They did not consider the parents as a component. However, in order to encourage the child to use modern technology and turn them from just entertaining to educational tools, it was essential to include the parents. Additionally, having a parent participate in the teaching process makes them aware of the academic subjects and the degree of changes that have taken place. This allows them to voice their opinion on the child's exposure to rapidly evolving ideas.

Despite combining traditional learning with visual learning, the authors in [7] concluded that

it is more important for kids to be physically present in school. However, in this study, the amount of time a child spends in school and the amount of time he spends using distance learning were equal, especially in the presence of uncontrollable circumstances, unlike Dong and the others [11] relied entirely on online learning. This study, like studies [9], [13], and [17], focuses on children's visual memories and how to encourage, stimulate, and harness the other senses to learn more.

Author [17] conveyed the idea of the material of the subject by translating it into the language of cinema to build a story. At the end of the application, it became possible for the students to prepare a documentary film with the same idea, but for the group taken in this research, it is not feasible due to their young age, and if there is room for applying fictitious ideas from paper for this study it is not practical for young.

[14], [15] and [16] relied on an integrated video that the child watched nonstop while we attempted to communicate with the child by asking and responding immediately. Getting the child to concentrate for an extended amount of time was challenging, but the presence of the parents made it more accessible.

The fact that this research deals with the mother tongue, the involvement of parents and children with the school facilitated the education process, as well as adding the possibility of including other topics within this application

6. CONCLUSIONS

The paper explores the three-step cycle of integrating traditional education with online visual learning in first-grade students. This three-step cycle includes Providing students with in-home activities with the assistance of parents, providing students with in-home activities with the aid of parents and teacher, and engaging students with in-class activities using revisions and persistence on the topic of writing practice. In the future, this application can be relied upon as an integral part of the traditional study after it has been presented to the competent authorities and guidance by adding or increasing its interfaces and adding the study materials for the first stage of the study.

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