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THE MODELLING OF SECONDARY SCHOOL STUDENTS' LANGUAGE COMPETENCE DEVELOPMENT THROUGH GAMIFICATION OF THE EDUCATIONAL PROCESS (ON THE EXAMPLE OF THE ARABIC LANGUAGE)

This article addresses the problem of secondary school students' language competence development through gamification. The existing education-oriented gamification models that can be used for solving various educational goals have been described and analyzed, constituting the basis for the author to design the Arabic language teaching gamification model aimed at shaping students' language proficiency and enhancing learning motivation. The application of the model requires following the basic principles: narrative structure, adventure stages, game elements (tasks, points and rewards, cooperative challenges, tokens and collectibles).

Keywords: language competence, secondary school students, the Arabic language, gamification.

Introduction

The school system plays a crucial role in the moral development of children and in fostering solidarity among individuals in a multicultural country, such as Israel. One potential approach to advancing the education system in this regard is to focus on studying the indigenous language, history, and culture. This includes both preserving and expanding opportunities for communication in the native language. It is necessary to find a realistic solution to the issue of enhancing students' motivation to learn their original language by utilizing the strategies and techniques that enable them to efficiently tackle this challenge. Utilizing gamification can effectively resolve this issue.

Gamification refers to the integration of game features into tasks that are not traditionally associated with games, such as education or training [1]. Contemporary proponents of gamification base their arguments on the examination of an individual's motivation and the inputs that influence their behavior. The person's motivation is driven by 8 needs: the need for self-importance, the need for success, the need to develop creativity, the need for possession and a sense of control, the need for public influence and social connections, the need to meet arising impatience, the need for engagement and satisfaction of curiosity, and the desire to avoid losses [2]. The concept is that individuals can fulfil these demands during the educational process if educators effectively incorporate gaming mechanics into instruction.

Nevertheless, a comprehensive investigation into the integration of gamification in the instruction of the local language at secondary schools is yet to be conducted. There is a limited number of publications that specifically address the use of gamification components in school instruction. From the information provided, it appears essential to summarize the current research data in this area, provide theoretical justification, expand upon, and experimentally confirm a model for the enhancement of Arabic language skills in Israeli secondary school students using gamification in the educational process.

Research methods and methodology

The purpose of the article is to present a structural model of secondary school students' language competence development through gamification (on the example of the Arabic language). Following the research purpose, firstly, we used the method of literature analyses alongside the generalization method in order to show some fundamentals for our own modelling. Secondly, we applied the method of modelling to build the holistic process of secondary school students' language competence development through gamification.

Research results and discussion

To start with, it makes sense to mention existing models of gamification usage for solving various educational issues.

The first model is *the ARCS Model, created by John Keller in 1980s*, which is a problem-solving methodology employed in instructional design to enhance student motivation. This learning model is

developed based on the expectancy value theory which contains two components; the value of the goal to be achieved and expectancy to successfully achieve that goal. Those two components were developed by Keller into four components. As a result, the acronym ARCS represents the four key components of the model: Attention, Relevance, Confidence, and Satisfaction [3; 4].

According to Keller, the game dynamic "surprise" refers to an unexpected event or its failure [3]. Gaming mechanics like pop-up quizzes and surprise messages can add surprise to learning. Keller says "inquiry arousal" drives curiosity, which leads to positive emotions and a desire to learn, be recognized, and take risks" [4]. Scenario-based problem-solving, thought-provoking questions and quizzes can include the "curiosity" game mechanism into games.

Another model, the "ARCS+G Model" is an expansion of the ARCS model developed by John Keller. It includes an additional element called "Generating Interest" This addition recognizes the significance of fostering learners' inquisitiveness and enthusiasm towards the educational content. The main objective is to stimulate learners' interest and innate drive to delve deeper into the learning content. Designers use components like narrative, thought-provoking inquiries, and interactive exercises to captivate learners' attention and foster more profound involvement [5].

The third model is *ARCS-V model* that has been enhanced based on the original ARCS model [6]. The ARCS-V model places specific emphasis on measures to enhance student motivation, particularly through the inclusion of a new factor called volition. The term "volition" refers to the acts and attitudes that determine one's commitment to persistently pursue a goal. The purpose of the volition factor is to aid teachers in fostering and maintaining learners' motivation and volition. It focuses on the intrinsic motivation and self-control required for learners to establish objectives, make decisions, and persevere in their learning endeavors despite obstacles.

In the next case worth mentioning, Nakajima et. al enhanced the ARCS model by introducing an additional factor called Assistance and Tools (AT). In the *ARCS+AT model*, university faculty members are regarded as "learners" who make use of e-learning [7]. The university supports them in terms of motivation by employing a checklist and tools provided by the model. The primary objective of the ARCS+AT model is to offer a systematic approach for addressing challenges related to the implementation of e-learning in universities [8].

There are other models, such as the *ELM model*, the *Vogue model*, the *ABC behavior model*, the *Octalysis framework*, and the *MDE framework* [9]. Some of them are not specifically designed for gamification but can be effectively applied to play design. For example, the Fogg model of behavior is not specifically designed for gamification, but it points out that for behavior to occur, three elements must converge simultaneously: motivation, ability, and motivators. Maximizing engagement and fostering meaningful interactions within gamified systems can be achieved by taking into account users' goals, creating activities that correspond with their skill level, and strategically placing triggers [10].

In Israel, there are some issues regarding the Arabic language and the unique circumstances resulting from the political and national conflicts between Arabs and non-Arabs. Those issues can appear in any country that uses more than one state or official language. The Arab community does not always use Arabic in business environments, with the exception of small local institutions that rely on the language. Although Arabic is the primary language of communication locally among the Arab minority in Israel, it is not the language of formal education, and other government sectors reduce its role and limit it to informal use. In general, the Arabic language in Israel has not yet gained its due compared to the Hebrew language, which dominates in most sectors. This situation has brought some problems and challenges to language teaching and acquisition for the Arab community in Israel, specifically school students, who may not be able to adapt to this complex situation. This leads us to address the problems of teaching the Arabic language in Israel. The Arabic language is characterized by linguistic duality, i.e., the presence of two forms of the language, formal and informal. However, Arab schools in Israel use an Arabic language that is neither formal nor informal. It is a mixture of the two, as school teachers usually speak different dialects, which are a mixture of Arabic words and informal Hebrew or English words in the classroom. The blended language of instruction may vary depending on the subject and books.

Moreover, Arab students in Arab schools in Israel have difficulty using the official language. This is due to the fact that formal language is not commonly used in school. In addition to the country's general image and marginalized status, the official language is absent. All of these factors made the student feel isolated, bored, and lacking motivation towards the Arabic language and culture. All of these reasons prompted us to build a gamification model for teaching Arabic to develop students' competence in this language and enhance motivation to learn.

The model we offer includes some elements of Keller's model and Octalysis framework with the addition of the element of identity (the existing ego), in order to fill the gaps in teaching the Arabic language and developing language competencies among seventh grade students. We have called our model "Journey

model” (Table 1). “Journey” refers to the intended destination of a traveler, involving relocation to another place. It is commonly associated with going out for a walk or recreational purposes. The definitions unanimously concur on the act of transitioning from one location or stage to another, which aligns with our paradigm. Travel is a process of acquiring experiences and making attempts, which is reflected in our model of experiences and stages of transition.

Table 1 – The model of secondary school students' language competence development through gamification of the educational process (on the example of the Arabic language)

Objectives	
1. Developing Arabic language competencies. 2. Strengthening cultural identity through the educational journey. 3. Motivating students through friendly interaction and competition.	
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Stages	Contents
1. Preparatory Stage	Examination Analysis Setting goals Design
2. Initiation Stage	Schedule Excitement Activation Actual experience
3. Exploration Stage	Execution Boosting objectives Observation
4. Application Stage	Implement challenges and puzzles Increase social interaction Enhancing cooperation
5. Consolidation Stage	Enhance a sense of accomplishment Strategic progress
6. Reflection and Evaluation Stage	Examination Analysis Evaluation

In tables 2–7 we are planning to describe teacher’s and students’ activities undertaken at each stage mentioned above.

Table 2 – Preparatory Stage description

Contents	Teacher’s activity	Students’ activity
Examination	Teachers provide an examination to assess the level of competence in the Arabic language among students, and a questionnaire to assess students' motivation in learning the language.	Students undergo a competence examination and fill out a questionnaire.
Analysis	Teacher analyzes test and questionnaire results according to the planned criteria to determine the competence standards that need improvement. The teacher shares the results with students.	Students discuss the results with the teacher in innovative ways to build a deeper and more comprehensive picture of the results and competencies. Students can use visual analysis tools such as “visual brainstorming” where they draw mind maps or visual concept maps, highlighting the relationships between the strengths and weaknesses in the results. This can be done on paper or using digital interactive tools such as “Classroom”.
Setting goals	Based on the results, the teacher expresses the learning objectives clearly and neatly.	Students create visual boards that contain pictures, drawings, or statements that represent their learning goals in an imaginative way. Students set individual goals based on the strengths they want to enhance or the weaknesses they want to improve, based on the previous analysis phase

Table 2 (cont'd)

Design	The teacher sets a vision to achieve the goals, fill the gaps, and raise the educational level based on the results she collected; chooses the activities and learning tools with students. The teacher collects and prepares the necessary educational materials and technological resources.	Students begin with a brainstorming session led by the teacher where they brainstorm activities and tools that can be used to overcome set challenges. Students participate in identifying gamification methods by suggesting games they would like to learn from.
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Table 3 – Initiation Stage description

Contents	Teacher's activity	Students' activity
Schedule	The teacher coordinates the stages and steps with the school system, vacations, and special programs, and arranges the tests.	Students get ready to use the educational game that was chosen in the previous discussion stage, to ensure their readiness to engage in the learning process through practical application. They choose the device on which they want to download the game.
Activation	The teacher asks the students to download the game, explains the method, and asks to follow the requirements to register and to enter the game. The teacher prepares a written user guide for the game with all the details about the game.	Downloading the application. Setting up a personal account. Security Setup. Game Login.
Excitement	The excitement of the students comes through showing the game in front of them to provide the students with information related to the trip, clarifying the communication between them and reminding them of the goals. As a first experience in showing the game, the teacher participates with the students in the trip, shows and explains the steps to solve the challenges.	By giving their opinions, highlighting their technical problems to avoid them with other students, students can also choose a personal image that represents them in the game in addition to reading the basic instructions, students should browse the user guide or instructions included with the game to learn how to play, the basic rules, and how to win or advance in the stages.
Actual experience	The teacher recommends that the students start the game officially. From this moment on, this stage is considered an important turning point in the students' educational experience, as the students move from the previous preparation stage to the stage of starting effectively.	In contrast, students begin their educational journey, and there is a set of activities and tasks that they must perform to ensure their full interaction with the game and achieve the educational goals. They enter the atmosphere of the game and interact with the educational content.

Table 4 – Exploration Stage description

Contents	Teacher's activity	Students' activity
Execution	1.Guiding students towards independence: At this stage, the teacher encourages students to explore the game freely and use their skills to solve challenges without relying entirely on guidance. This opportunity allows students to develop independence and critical thinking skills. 2.Promoting the spirit of curiosity: The game includes elements that encourage students to explore and search, pushing them to search for answers within the game. 3.Guiding exploration: The teacher can provide general guidelines without giving direct answers, which makes students manage their own exploration process with a sense of challenge.	Independence: Students explore the game independently, without relying directly on the teacher. They try to solve challenges using their prior knowledge and acquired skills. They make decisions individually or in groups based on their understanding of the situation in the game. 2. Curiosity: They curiously search for unknown or hidden elements in the game, such as clues, keys, or solutions. They try out new tools or techniques to see how effective they are. 3. Exploration: They manage their own progress in the game and determine the steps they need to take based on general guidelines provided by the teacher; use analysis to solve tasks gradually, focusing on more difficult tasks strategically; continuously review and evaluate their progress to ensure they are on track; collaborate with peers or interact individually based on need to direct their behavior toward goals.

Table 4 (cont'd)

Boosting objectives	Supervising the implementation of activities. Encouraging students by urging them to enter and solve tasks. Providing ongoing feedback.	Students actively adapt to feedback, listening carefully to and using prompts and motivational cues to improve their strategies and performance as they face challenges. Students feel a sense of continuous progress as they pass each level.
Observation	Providing assistance to students when needed.	Students share difficulties, challenges, or technological problems with the teacher, and turn to the teacher when needed.

Table 5 – Application Stage description

Contents	Teacher's activity	Students' activity
Enhancing cooperation among students	In the game, there is a window for group discussion. The teacher encourages students to think together and find collaborative solutions rather than individual solutions.	Students cooperate with each other in a way that benefits them: discussion, groups, extra time, meeting together. Students exchange ideas frequently and communicate effectively to ensure that everyone is informed. Solutions and problems are discussed in a spirit of cooperation and respect. Students learn from each other building on the skills and knowledge of their classmates, which helps them to develop their individual and collective skills.
Increase social interaction	The teacher provides help and support when needed, interacting through the leaderboard, motivating them by displaying who is progressing fastest in the journey, using the acquired skills and knowledge to solve challenges. The teacher can set aside some time at the end of the challenges or during certain stages of the game for students to exchange and discuss things away from the educational challenge, allowing for the development of more friendly social relationships.	Students work individually and collectively to solve challenges and puzzles. By discussing their experience of the game as both educational and entertaining and sharing personal experiences about what they learned or enjoyed, this enhances social relationships between them.
Implement challenges and puzzles	Teachers at this stage guide students toward strategic thinking, provide constructive feedback, promote adaptation to difficulties, and encourage flexibility in solutions. They also monitor students' progress and provide support when needed, with an emphasis on continuous motivation to continue challenges and develop their skills.	Students solve tasks in their journey. They notice that challenges gradually increase in difficulty as they progress through the game, and they adapt to this by developing their skills. They test new strategies to suit the increasing level of difficulty and learn how to face challenges in a more complex way.

Table 6 – Consolidation Stage description

Contents	Teacher's activity	Students' activity
Enhance a sense of accomplishment	Announcing students' achievements, the teacher celebrates students' achievements publicly in front of them by overcoming challenges. The teacher organizes a short session for students to reflect on what they have achieved, where students are encouraged to talk about the challenges they faced and how they overcame them, which enhances the sense of personal and collective achievement. The teacher provides positive and specific feedback about each student's performance, which helps them realize the areas in which they excelled and motivates them to put in more effort in the future.	After the teacher announces their achievements, students feel proud and express their happiness and appreciation for each other. In the joint session, they share their stories about the challenges they faced and how they overcame them, which enhances their awareness and ability to solve problems. They receive positive feedback and use it to develop their skills and think about how to improve their performance in future challenges. They exchange ideas about teamwork and plan to apply what they have learned to face future challenges with a positive spirit and increased confidence.

Table 6 (cont'd)

Strategic progress	Teachers at this stage guide students toward advanced thinking by presenting challenges of increasing complexity. They provide support when needed but leave space for students to make their own decisions. They demonstrate how challenges are time-bound, which motivates students to manage time effectively. Teachers encourage students to develop strategic plans that include long-term solutions and adapt to changing times. They also provide immediate feedback on students' strategies and encourage continuous improvement.	Students use established skills as a foundation for strategic thinking in the face of increasingly complex challenges. They build advanced strategies that involve long-term thinking and comprehensive planning, while considering the time allotted for each challenge. They learn how to make quick and effective decisions under time pressure. Additionally, they collaborate with peers to divide tasks and achieve common goals. Students review their performance after each challenge and adjust their strategies based on feedback from the teacher.
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Table 7 – Reflection and Evaluation Stage description

Contents	Teacher's activity	Students' activity
Examination	At the end, teachers give a test to assess students' level of Arabic language competence and distribute a questionnaire to gauge their enthusiasm for learning Arabic.	Students undergo a competence examination and fill out a questionnaire.
Analysis	Teachers analyze the measurement results. Grants certificates of participation and appreciation to students who participated in the journey and completed the itinerary.	The student who participated in the journey receives a certificate of participation and appreciation.
Evaluation	Teachers conduct a comprehensive assessment of student performance at each stage of the journey (e.g., exploration, application, consolidation), to determine where performance was strong and where improvement is needed. By reviewing student performance across the different stages, teachers can identify common patterns, such as specific areas that were challenging for most students for future improvement.	Students can also provide feedback to the teacher on which activities or stages they felt were most helpful to them and suggest improvements for the future.

The application of our Journey model requires following basic principles as these:

1. Narrative Structure.

The story is the backbone of the model. The students are the heroes who receive a message from the past, to discover their country, and begin an adventure to discover geographical areas of the country, when they complete the task related to each region, they get to know a character from the region who has a relationship with the region's heritage or folklore. At the end of all tasks, they receive a certificate that they have completed the lofty task: protecting the cultural and linguistic heritage of the Arabic language.

The story is divided into stages and missions representing different parts of the country.

2. Adventure Stages:

Each stage represents a location in the country (such as: Haifa, Nazareth, Ras Naqoura, etc.). Each site contains educational tasks that enhance specific Arabic language skills and provide information about the place.

3. Game Elements:

Tasks: Challenges to Arabic language competencies.

Points and Rewards: Students receive points, rewards, and tokens upon completing tasks.

Cooperative Challenges: Tasks that require cooperation between students, which enhances team spirit and teamwork.

Tokens and Collectibles: Items which students acquire represent their achievements and progress in the story.

Conclusion

To sum up, within the scope of this article, we examined the many gamification models that are currently in existence and presented them, along with the theories behind them. We provided an in-depth explanation of our own model called "Journey Model", discussing its significance, characteristics, and the necessity of its use.

Our model promotes interaction and participation among students, attracts their attention through an exciting story, and enhances their linguistic and cultural skills through interactive and motivating

tasks. In addition, this model is flexible and can be customized for any other academic subject (chemistry, biology, literature, etc.) or other cultural context through:

- Modifying the story: to fit the academic topic or cultural context;
- Changing tasks: to suit the skills to be enhanced;
- Using texts that are appropriate: to the cultural and educational context.

The students will establish their cultural and geographical identity by linking the linguistic legacy to specific locations. Places serve as reservoirs of cultural and linguistic memory because their names, physical characteristics, and everyday practices have significant meanings and values for the society inhabiting them. This model demonstrates the correlation between cultural and geographical identification with the Arabic language.

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МОДЕЛИРОВАНИЕ РАЗВИТИЯ ЯЗЫКОВОЙ КОМПЕТЕНТНОСТИ УЧАЩИХСЯ СРЕДНИХ ШКОЛ ЧЕРЕЗ ГЕЙМИФИКАЦИЮ ОБРАЗОВАТЕЛЬНОГО ПРОЦЕССА (НА ПРИМЕРЕ АРАБСКОГО ЯЗЫКА)

В данной статье рассматривается проблема развития языковой компетентности учащихся средней школы через геймификацию. Описаны и проанализированы существующие модели использования геймификации для решения различных образовательных задач, что составляет основу для создания авторской модели. Автор конструирует модель геймификации для обучения арабскому языку, чтобы развить у учащихся компетентность в данном языке и повысить их мотивацию к обучению. Применение модели требует соблюдения основных принципов: повествовательной структуры, наличия этапов и игровых элементов (задания, очки и вознаграждения, совместные задачи, токены и предметы коллекционирования).

Ключевые слова: языковая компетентность, учащиеся средней школы, арабский язык, геймификация.