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14. GAMIFICATION AS AN EFFECTIVE METHOD FOR MANAGING USER ENGAGEMENT IN MOBILE APPLICATIONS

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Annotation. This article examines the concept of gamification in mobile apps, focusing on how game elements like points, badges, leaderboards, and challenges enhance user engagement and motivation. It covers the application of gamification in sectors such as health, education, and productivity, explaining its impact on user behaviour through psychological principles like competence, autonomy, and relatedness. The article also highlights the potential risks of poorly designed gamification systems and emphasises the importance of tailoring gamified experiences to different user groups to ensure long-term engagement and success in mobile app development.

Keywords. Gamification, user engagement, motivation, mobile apps, game elements, points, badges, leaderboards, psychological needs, health apps, educational apps, productivity apps, competition, autonomy, competence, relatedness, personalised gamification.

Gamification can be defined as using game elements in non-game situations to make activities more interesting and motivating for users [1]. Today, many mobile apps use gamification to improve how users interact with their services. This means including elements such as points, badges, leaderboards, and challenges, which usually come from video games, into regular tasks to increase user interest and participation [2]. The main goal of gamification is to make routine or boring activities enjoyable, thus encouraging users to keep using the app more often and for longer periods. By making mundane tasks more interactive and rewarding, gamification helps retain users and boosts overall engagement.

The relevance of this topic comes from high competition among mobile applications. Developers continuously search for new ways to attract and keep users. With so many apps available, standing out in the market has become more challenging than ever. Gamification has become popular because it taps into the natural human desire for achievement and social connection, making apps more enjoyable [3]. Gamification is used in many areas, especially health and wellness, education, and productivity. For instance, health apps might encourage people to exercise more or eat healthier by awarding points or badges for achieving fitness milestones. Educational apps turn learning into a game, with rewards for completing tasks or mastering new concepts, which motivates students to engage with the material regularly. Productivity apps use gamification to make routine tasks more exciting by setting challenges and rewarding users for meeting their goals, making it easier to stay motivated throughout the day.

Important research by Xu et al. (2022) and Dichev and Dicheva (2017) shows that gamification can effectively increase engagement and motivation, although outcomes may vary based on how well the gamification is designed and how it matches users' preferences. Hamari et al. (2014) also confirmed generally positive effects but noted the importance of context [3]. In addition, user feedback and personal preferences play a significant role in determining whether gamification will be successful in a particular app.

Gamification involves several typical elements that come from video games. One common element is points. Points are rewards given to users for performing tasks or achieving goals. They immediately show progress and help users understand how well they are doing. According to research, collecting points makes users feel competent, which motivates them to keep using the app. Points create a sense of achievement and encourage users to reach higher levels of performance.

Another common element is badges or medals. These are special awards users earn when they complete certain achievements. Badges visually represent success or mastery of a task and give users recognition for their efforts. Displaying badges often helps users feel proud of their achievements, motivating them to continue engaging with the app.

Leaderboards are lists ranking users based on their performance. They introduce competition by showing users how they perform compared to others. Leaderboards can strongly motivate competitive people who like to improve their rank. However, some studies have shown negative effects too. For example, research mentioned by Christy and Fox (2014) found that some users feel discouraged if they regularly rank low on leaderboards, which means gamification must be designed carefully to avoid negative emotions [2].

Progress bars and levels are visual indicators showing how close users are to completing a task or reaching a goal. People naturally want to complete tasks fully, so progress indicators motivate users by giving a clear sense of how much is left. This creates a psychological need for closure and motivates continued use of the app to reach completion.

Challenges and quests are special tasks or missions users can do for rewards. These challenges often have a story or clear purpose, making activities more interesting. Users feel they have specific goals to achieve, which makes the experience feel more like playing a real game and encourages deeper engagement.

In addition, academic studies highlight the importance of satisfying basic psychological needs such as competence, autonomy, and relatedness through gamification. Competence means users feel skilled and capable when they achieve goals. Autonomy is supported when users have the freedom to choose how they achieve these goals. Relatedness comes from social connections formed through gamification features like leaderboards or collaborative tasks. Research by Bitrián et al. (2021) has shown that when these needs are met, user engagement improves significantly [4]. Users who feel competent, free to choose their path, and connected with others enjoy the gamified app more, use it longer, and are more likely to recommend it.

Thus, gamification's success depends greatly on carefully designed elements that fulfil psychological needs and align well with user preferences and expectations.

Gamification is frequently used in mobile health (mHealth) apps to encourage healthier behaviours and increase user engagement with health management. These apps incorporate game features like goal-setting, progress tracking, and rewards to motivate users. For example, fitness apps may track daily steps or set weekly exercise challenges, offering points, badges, or rewards when tasks are completed. This approach motivates users by providing immediate feedback and showing their achievements.

A systematic review by Xu et al. (2022) found that gamification generally helps increase physical activity, with most studies reporting positive effects on exercise participation, although results were modest. Common elements in these studies include clear goals, progress indicators, and rewards for consistent behaviours. Setting small, achievable goals encourages users to build healthy habits, while visual feedback, such as progress bars, helps users stay motivated by showing improvements.

Individual differences, including age and personal preferences, significantly impact how effective gamification is in health apps. Younger users tend to respond better to competitive challenges, while older adults may prefer less competitive, simpler features, such as personal goal achievements instead of leaderboards. Developers should carefully consider the target audience to ensure gamification elements suit users' preferences and abilities.

In addition to fitness, gamification is also used to manage chronic diseases. Apps using points, badges, or reminders help patients regularly track symptoms or take medication. For instance, a patient might earn badges for consistently logging daily medication use, making routine health tasks feel rewarding rather than tedious. Preliminary findings indicate improved adherence to health management tasks when these gamified elements are used.

However, poorly designed gamification can lead to negative outcomes. Excessive competition, such as aggressive leaderboards, may harm users' mental health or cause physical strain. Effective gamified health apps focus on personal improvement, collaboration, and positive reinforcement. This approach reduces frustration and promotes sustainable health improvement. Gamification has great potential for health apps but must be thoughtfully tailored to user characteristics and avoid overly competitive elements to maximise positive outcomes.

Educational apps widely adopt gamification to make learning activities more enjoyable and engaging. A well-known example is Duolingo, a language-learning app, which uses various gamified elements such as points, badges, daily streaks, and leaderboards to encourage learners to practise regularly. Other apps for mathematics, coding, and different subjects use similar methods, turning the learning experience into something more game-like, helping students stay motivated and active.

Typical gamified features in educational apps include points, badges, daily challenges, and social interactions. Points serve as immediate feedback, informing students how well they perform on tasks or quizzes. Badges show mastery or completion of lessons and help students feel proud of their progress. Daily challenges encourage consistent practice, which is essential for learning. Leaderboards or social sharing options can enhance motivation by creating friendly competition or collaboration among peers.

Research by Dichev and Dicheva (2017) generally supports the effectiveness of gamification in education, showing increased engagement, improved persistence in learning tasks, and sometimes better academic performance. Many studies report positive effects, such as students spending more time learning or demonstrating higher retention of new knowledge when using gamified apps.

However, there are also negative examples. Hanus and Fox (2015) studied gamification in a university class where students received badges and leaderboard positions. Surprisingly, the gamified approach decreased student motivation and satisfaction compared to traditional teaching methods. Students felt that gamification made the learning process superficial and overly competitive, decreasing their intrinsic interest in the subject. This example clearly shows that not all gamification is beneficial, and the quality of implementation matters a lot.

For gamification in education to work effectively, the approach needs to be pedagogically sound. Game elements must align with learning objectives and should not distract students from actual learning goals. For instance, badges should represent meaningful achievements rather than random tasks. Leaderboards should encourage collaboration and positive competition rather than demotivating weaker students. Clear and constant feedback, achievable goals, and progression indicators help create a positive learning experience.

Educational gamification offers significant potential benefits but requires careful planning. Developers should focus on educational goals, designing gamification features to support intrinsic motivation and learning engagement, avoiding overly competitive elements that might discourage some learners. Properly applied, gamification can transform educational apps into effective and enjoyable learning tools.

Gamification is also frequently applied in productivity apps to help users better manage routine tasks or goals. A popular example is the app called Habitica, which transforms everyday tasks into elements of a role-playing game. Users earn points and rewards for finishing real-life tasks, such as daily chores or important deadlines. The main idea behind Habitica and similar apps is to make ordinary tasks more enjoyable and rewarding, thereby motivating users to remain consistent and productive.

In workplaces, gamification is often used to boost employee engagement and productivity. Companies may introduce gamified elements such as points, badges, or leaderboards in sales contests, training programmes, or daily work tasks. Research by Rahiman et al. (2023) has shown that gamification effectively increases employee motivation and job engagement by fulfilling psychological needs such as autonomy, competence, and relatedness. For instance, leaderboards and badges can make achievements visible, creating a feeling of competence and recognition among employees. Similarly, allowing employees to choose how they approach tasks (autonomy) or engage in team competitions (relatedness) significantly increases their enjoyment and motivation at work.

The same study highlighted that gamification positively impacts productivity when it is perceived as meaningful and useful by employees. Employees who see clear benefits in gamified systems tend to be more engaged in their work and perform better. However, it is important to design these gamified systems carefully. Transparent reward systems are crucial because unclear or unfair rewards may lead to frustration and reduce engagement. Employees should clearly understand how points or badges relate to their actual performance or productivity.

Additionally, companies must consider individual differences among employees, sometimes described as different "player types". Some employees may strongly enjoy competition, striving for higher leaderboard positions, while others prefer collaborative or individual achievements. Therefore, gamification in workplace contexts should offer various ways for users to engage, catering to diverse preferences. For example, gamified training programmes can include options for team-based tasks, individual quests, or competitive leaderboards, allowing each employee to choose a path that suits their personality and working style.

When designed thoughtfully, gamification in productivity and corporate apps helps employees feel motivated, recognised, and engaged. Yet, achieving these benefits requires careful consideration of transparent design, meaningful rewards, and customisation based on employees' personal preferences and characteristics.

Gamification is widely recognised as an effective way to increase user engagement in mobile apps. It leverages natural human enjoyment of games and achievements, helping users become more involved in tasks related to health, education, and workplace productivity. The key advantage of gamification lies in its ability to make tasks more enjoyable, thus improving user retention and overall motivation.

Research consistently highlights the importance of thoughtful gamification design. Successful gamified apps carefully integrate points, badges, leaderboards, and challenges to fulfil users' psychological needs like competence, autonomy, and relatedness [4]. Users remain more engaged when these elements genuinely enhance their experience, making activities meaningful or enjoyable rather than tedious.

However, gamification has limitations and potential risks. Poorly designed gamification systems may negatively impact user motivation, causing frustration or disengagement. For example, overly competitive elements such as aggressive leaderboards may discourage some users [2]. Thus, developers must balance competitive and cooperative aspects carefully and ensure gamified elements align well with user preferences.

Individual differences such as age, personality, or personal goals greatly affect how users respond to gamification. Future research should further explore how specific gamification elements work for different user groups, helping designers better tailor their apps. Continuous improvement of gamified systems through user feedback and evidence-based research is essential. It helps maintain user interest over longer periods.

Future developments in mobile technology and evolving user expectations will likely encourage more creative and adaptive gamification strategies. Ongoing research should also investigate ways to sustain user interest through innovative features, personalised challenges, or adaptive difficulty levels.

In summary, gamification remains a valuable tool for mobile app developers. When implemented correctly, gamification significantly improves user motivation, satisfaction, and engagement. However, careful attention to design, transparency, and individual user differences is necessary to achieve long-term success. As gamification continues to evolve, it holds substantial promise for enhancing user experience across diverse app contexts, making it an essential method in mobile application development.

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