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Research Digest

Digital Game-Mediated Language Learning for Adults

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Over the last two decades, digital gaming has become one of the most popular forms of entertainment, with worldwide revenue surpassing sales of TV, movies, and music (Reuters, 2018). Players of digital games span all age groups and backgrounds, partly due to the popularity of "casual" gaming on smartphones and tablets. Gaming has become a hub for social interaction, through multiplayer games, fan communities, game jams, and esports.

Digital games also have increasingly been viewed as promising tools for teaching and learning. The potential of games to immerse players in virtual environments that can require complex problem solving, literacy and computational skills, collaboration, and systems thinking has captured the attention of educators across settings and with learners ranging from preschool to postsecondary education (Boyle et al., 2016; Connolly et al., 2012).

The popularity of digital games for learning has been particularly pronounced in second and foreign language (L2) education. Digital games have variously been viewed as a means of making rote language practice more fun and engaging, introducing new vocabulary in a (digital) context, and providing opportunities for authentic language use with other players, among other rationales. A growing number of publications offer strategies and recommendations for game-mediated language learning (GML2; Peterson, 2013; Reindardt, 2019; Reinders, 2012), and varied games have been recommended for GML2.

While theoretically and conceptually, a strong case can be made for the value of digital GML2, the empirical evidence in support of GML2 is less convincing. The considerable diversity in games and game genres as well as how games are incorporated into language instruction make it difficult to generalize about the benefits of GML2 in general or the outcomes of particular games or strategies. In addition, while there have been many studies of GML2 with adult learners in college classrooms, there has been little research on the use of GML2 in adult literacy and basic education programs.

In this article, we will identify and describe several different approaches to using GML2, drawing in particular on Reinhardt and Sykes' (2012; 2014) framework and related literature. We will conclude with a brief discussion of potential applications to adult literacy and basic education settings and learners.

Types of Game-Mediated Language Learning

A common assumption about the use of digital games in education is that learning takes place

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through individual learners playing games designed specifically for education. In reality, games can be used in many different ways depending on the learning goals, resources, and preferences of educators and learners. Educational games are just one part of a broader set of approaches that have been associated with GML2. Reinhardt and Sykes (2012; 2014) distinguish between three broad types of GML2: game-enhanced, game-based, and game-informed.

Game-Enhanced GML2

Game-enhanced GML2 is the use of games designed for entertainment as part of formal instruction. Some such games can provide opportunities for contextualized language learning, as learners encounter and interpret written and spoken language during game play. York (2020) describes how the multiplayer (and free) game *Among Us* can be used to promote language learning among students within and across classrooms, as well as remotely. Other entertainment games encourage and motivate language learning in popular and potentially familiar casual game formats, such as *Words with Friends*. As Reinhardt and Sykes note, pedagogical mediation is important to take full advantage of the language learning opportunities associated with such games. Pedagogical mediation (Sykes & Reinhardt, 2013) consists of creating "wraparound" activities that help focus learners' attention and efforts towards language learning. Such wraparound activities can include framing game play as a learning activity, identifying specific language learning goals, debriefing after game play, or creating extension activities, such as having learners talk about themes in a game or write game reviews (e.g., Miller & Hegelheimer, 2006; Reinhardt & Zander, 2011; York, 2020). Reinhardt and Zander (2011), for example, asked students to identify popular social networking games (such as *YoWorld*), teach each other how to play, and identify the language learning opportunities associated with these games. As deHaan (2020b) notes, however, creating meaningful activities can be time-consuming, and students may question activities that are not explicitly tied to language learning goals.

Game-Based GML2

Game-based GML2 involves the use of games designed specifically for learning. While there are numerous educational games on the market, there are relatively few games designed specifically for L2 learning, and many have not received positive evaluations from practitioners. L2 educational games vary considerably in how they are designed to support second language learning. Some games use direct instruction and practice, for example, to introduce new vocabulary and or grammatical rules (e.g., Kao, 2020; Yu, 2018). *Wordcraft*, for example, allows teachers to create simple multiplayer vocabulary games involving tasks like matching words to definitions (Meyers, 2018). Other games immerse learners in a virtual world where they use L2 in game play to make progress in the game (e.g., Chen, 2016). For example, in the award-winning mobile game *Codex: Lost Words of Atlantis* (XPRIZE, 2019) players learn how to decode and pronounce English words as they take on the role of adventurers who are trying to uncover the secrets of Atlantis. *Spaceteam ESL*, another mobile game, promotes verbal fluency by requiring players to share instructions with each other as they learn to pilot a spaceship (Berry, 2021).

There are many challenges in using educational games for L2 learning. Educational games in general are often aimed at children and have characters or storylines that are too childish for adult learners. Even popular games can quickly become unusable as digital tools

evolve. Furthermore, evaluating the quality or appropriateness of L2 educational games can be important. Often the label "educational game" is applied to digital applications that are little more than interactive workbooks, without the design features that can make games effective learning tools (Reinhardt, 2019). Many educational games used in published studies are developed by the researchers and difficult or impossible for teachers to obtain, while designers of commercially developed educational games often do not publish evidence of their games' effectiveness.

Game-Informed GML2

Game-informed GML2 consists of using instructional strategies based on learning principles associated with games and play, or alternatively, using specific tools or techniques found in games. This approach does not rely on the use of games themselves but assumes that educators can emulate the ways that well-designed games help players learn to master complex and challenging tasks. Educators can use the learning principles that inform games to create more successful learning experiences. James Paul Gee's (2003) list of 36 learning principles drawn from games is the most well-known; while these principles are not specific to language learning there are many obvious applications. Among these principles, Sundqvist and Sylvén (2012) identified three that are closely related to L2 acquisition, namely active, critical learning principle, practice principle, and regime of competence principle. Educators have also drawn on theories of language play to inform L2 teaching and learning (e.g., Hattem, 2014).

A somewhat different approach is the use of specific techniques or tools associated with games, such as designing learning activities in the form of quests, awarding badges for particular accomplishments, or even designing entire lessons in a game-like format like Jeopardy. This approach is commonly described as "gamification" and typically is aimed primarily at increasing learner engagement and motivation. For example, Barcomb and Cardoso (2020) developed a gamified course management system (*English Detective*) with points and badges to teach students' English phonology. Other popular commercially available examples include Quizlet, Duolingo, and Busuu, although whether or not these are games or gamified instruction is debatable.

An advantage of a game-informed approach to L2 teaching and learning is that games or any other technology are not required. However, the game-based learning principles identified by Gee and others may not readily align with typical L2 classroom practices. The popularity of Gee's work on games and learning has obscured his main argument: that well-designed games reflect principles of learning that are associated with a particular perspective on good teaching and learning in general. Games are not the origin or only examples of these principles, and L2 educators may find useful examples elsewhere. Lastly, gamification strategies alone can conflict with the application or intent of these learning principles. Awarding badges to motivate rote learning or using a game show format to make a lesson on grammatical rules more "fun" may not promote meaningful language use.

Empirical Generalizations and Controversies

The empirical literature on game-based learning and more specifically, on GML2 has grown considerably over the past several decades. As we mentioned above, the diversity in GML2 has posed a challenge to the development of a coherent body of knowledge in support of GML2 in general or

about particular GML2 approaches. Reviews of this literature have yielded predictably mixed findings.

In an early, widely cited review of literature on "serious games," Young et al. (2012) found limited evidence of positive impact on student achievement. One issue was the quality of available studies; of 363 relevant articles that were analyzed for inclusion, only 39 met the final criteria for inclusion. Young et al. (2012) found differing results when they analyzed studies by subject area. They found particularly positive outcomes for the use of games to enhance language learning; however, the authors stress that "language learning gains were not uniform across individuals or topics but appear to result from a complex situated interaction of learner, game, and context" (p. 74). In other words, effective GML depends not simply on finding the "best" game, but on how learners engage with the game and how the learning context is designed to support and extend GML. Young et al. (2012) speculate that GML may be particularly helpful for language learning when gaming provides immersive experiences in which nonnative speakers use the target language to interact with more fluent peers or native speakers, such as in massively multiplayer online role-playing games. In addition, they cite research indicating that learners can improve their language skills simply by observing game play, without actually playing the game themselves (deHaan & Kono, 2010). Young et al.'s recommendation that educators and researchers give particular attention to game-player-context interactions, including social interactions within and around games, continues to be important. They stress that games should not be viewed as stand-alone educational tools, but rather that skilled teachers are necessary to prompt deeper, more meaningful learning that extends beyond the game itself.

More recent reviews have focused specifically on games and language learning (e.g., Acquah & Katz, 2020; Huang et al., 2018; Poole et al., 2020; Xu et al., 2020). In general, these reviews suggest that while the literature on GML2 is burgeoning, a relatively small proportion of publications consist of well-crafted empirical studies. Most studies involve educational games; research on game-informed L2 is rare (Gao & Gee, 2021). Much research has focused on student perspectives on GML2 and affective outcomes, such as anxiety reduction, improved motivation, or enjoyment, with generally positive findings. Studies of language learning outcomes primarily investigate vocabulary learning, again with generally positive outcomes, while data on other L2 outcomes is limited. One limitation of this research is that appropriate comparison groups are not commonly used, raising questions about whether positive outcomes might be due to a novelty effect rather than particular benefits of GML2.

Despite Young et al.'s recommendation, few subsequent studies have explored learners' social or linguistic interactions in GML2. Researchers have documented extensive opportunities for language socialization and learning in the everyday gaming practices of youth and adults (Chik, 2014; Peterson, 2012; Ryu, 2013), but studies of such contextualized, interactive language learning in classroom settings are rare.

Applications in Adult Literacy Education

Studies of game-mediated learning with adult second language learners have primarily been conducted in college classrooms; documented examples of GML2 in community-based literacy programs or other informal educational contexts are hard to find. Some particular challenges to using GML in these settings can include adult

student and instructor perceptions that games are not legitimate learning activities, are not efficient ways to meet language learning goals, or require access to and fluency with unfamiliar digital tools (Reinhardt & Zander, 2011). More generally, much of the literature on GML2 focuses on student learning rather than on the teacher's role, despite the argument by scholars such as Young et al. (2012) that skilled teachers are crucial to the success of GML2. However, the small but growing literature on GML2 *teaching* offers a useful starting point for teachers interested in using GML2 in adult literacy settings.

The first questions to ask in any setting are: What is the rationale for using GML2? What student needs or pedagogical goals might GML2 address? In L2 learning, arguments for the potential value of GML2 have often cited broader literature that emphasizes the potential of games to enhance student motivation, engagement, and enjoyment of learning (Poole et al., 2020). As we noted above, however, GML2 can align well with language-specific aims. Reinhardt (2019) illustrates how GML2 can be informed by structural, cognitive, and sociocultural theories of second language acquisition, suggesting how educators can use GML2 to achieve varied language learning goals. Of particular interest to adult language educators may be his description of specific affordances of GML2, including opportunities for contextualized language learning, goal-oriented learning, space for sheltered practice, and learner autonomy.

A second question, given the diversity in GML2 approaches is: What form should GML2 take in order to best meet these needs or accomplish these goals? (deHaan, 2019). As GML2 scholars and educators suggest, this requires attention not only to language use embedded in the game (if a game is used at all) but also to how language might be used in activities before, during and after game play. GML2 can include activities that do not require game play itself; learners can visit game fan sites, watch game play videos (Twitch), and discuss game-related topics, such as how gaming might affect family relationships (Siyahhan & Gee, 2018). York (2020) provides a detailed rationale and examples of these kinds of activities using the popular (and free) social game *Among Us*, and many of his examples could be adapted for use with other COTS games. deHaan (2020a) describes a more general list of pre-, during, and post-game language learning activities that can be used to achieve a variety of language learning goals with tabletop as well as digital games. Reinhardt (2019) along with Sykes and Reinhardt (2013) are useful, book-length discussions of both theory and practical applications of GML2.

Lastly, deHaan (2019) offers a useful caution for educators interested in the use of digital games, or any innovative technology. He questions the value of using games simply to generate student talk, if their use of language is not ultimately tied to a meaningful purpose beyond the game. This caution seems particularly apt for adult L2 learners, who typically have immediate goals and needs for improved communication abilities and are also seeking to improve their life situations. How to "scaffold students from playing to participation in various spheres of life" (deHaan, 2019, p. 3) remains an open question, and perhaps one of the more important directions for further scholarship and practice in GML2.

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