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Digital versus classroom discussions: Motivation and self-efficacy outcomes in speaking courses via Gather.town

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Abstract

The debate on online and traditional classroom methods has gained traction in the rapidly changing world of education. This is especially true when discussing elements that are critical to the learning process, such as student motivation and self-confidence. Our research examined these components in great detail in the context of a speaking course to learn German as a foreign language. Thirty-three students made up the sample. They were divided into two groups: one that took part in traditional classroom discussions (which served as the control group) and another that experimented with discussions in the Gather.town online community. The first of our study's two goals was to determine whether the students' self-efficacy and intrinsic motivation had changed significantly after six weeks of discussion. Secondly, we were interested in determining which medium—face-to-face or online—had a stronger influence on fostering these essential educational traits. We used surveys that were distributed at the start and end of the six-week study window to gather our findings. The findings of our study were compelling. Compared to their peers in the traditional classroom environment, students who used Gather.town as their discussion platform displayed a more pronounced increase in both motivation and self-efficacy. This highlights the burgeoning potential of online learning environments like Gather.town in the modern educational landscape and suggests the benefits of incorporating such cutting-edge tools to increase student motivation and confidence.

Introduction

The COVID-19 pandemic has accelerated the adoption of online and distance learning, and it is increasingly likely that the educational landscape of the future will include virtual reality or applications from the metaverse (Halasa et al., 2020). Acting as an expansive interconnected digital domain, the metaverse allows users to partake in a multitude of activities while still being linked to the real world. Conversely, virtual reality transports users into simulated realms, usually isolating them from their actual surroundings. In higher education, especially during and after the COVID-19 lockdowns, online/distance learning has become a crucial component (Abusalim et al., 2020). Applications that use the metaverse, like Gather.town, give students a virtual environment in which to interact and learn. These applications may have advantages over more conventional online and in-person learning settings. The justification behind our focus on a virtual reality mechanism simulating real-life scenarios is that Artificial Intelligence (AI) such as ChatGPT and others, have created a disruption in education habits, which may and can be beneficial if used correctly. A content analysis of news articles performed by Sullivan et al. (2023) indicated a predominant focus on academic integrity concerns and innovative assessment design in the public discourse and university responses regarding ChatGPT. To foster meaningful and intrinsically motivating learning experiences, educators are encouraged to utilize authentic assessments, which are creative learning experiences to test students' skills and knowledge in realistic situations (Rudolph et al., 2023, as cited in Wiggins, 1990). This is why we concern ourselves with one method of testing students' skills in real-life situations with the use of speaking scenarios constructed in Gather.town. Therefore, this study seeks to determine how small group discussions conducted in-person versus online using Gather.town affect students' intrinsic motivation and overall self-efficacy. This study aims to compare the psychological effects of small group discussions conducted on Gather.town versus those conducted in conventional face-to-face settings. The main goal is to identify potential differences in how well these discussion modes affect students' self-belief in their abilities. The following research questions serve as our study's compass:

1. How does the chosen medium for small group discussions, be it face-to-face or through Gather.town, impact students' sense of self-efficacy?

2. How do the modes of conducting small group discussions (in-class or online via Gather.town) affect student intrinsic motivation?

For both the initial and follow-up assessments of participants' self-efficacy levels, we will use a modified version of the Generalized Self-Efficacy questionnaire to explore these questions (Rayyan et al., 2023). Through this investigation, we hope to advance knowledge of the use of distance learning in the classroom and shed light on its psychological effects. In addition, we hope to add to the body of knowledge already available on the use of distance learning technology in education and shed light on the psychological effects of using such technology by addressing these research questions.

In the fields of education and technology, investigating learning within metaverse applications is crucial because it represents a fundamental change in how we approach instruction and interaction. This research field is becoming more well-known because it has the potential to transform education through cutting-edge, all-encompassing, and personalized learning environments. It is crucial to look into the efficacy of metaverse applications because of the accelerated adoption of digital tools in education spurred by the COVID-19 pandemic. These tools are adaptable, useful in many areas of education, and have the potential to provide universal access to education. It is crucial to comprehend how they affect learner motivation and engagement because by doing so, educators can improve learning outcomes (Marini et al., 2022). Additionally, this research can provide beneficial pedagogical insights that will help teachers make well-informed decisions about how to incorporate metaverse applications into their teaching methods. In the end, exploring learning in metaverse applications is an essential step in preparing students for the demands of a world that is becoming more connected and digital.

Literature review

Recent years have seen a significant increase in research on online and distance learning, particularly with the rise of COVID-19 lockdowns. As the next section will show, studies that contrast traditional classrooms with blended and fully online options have found that small group discussions have a number of advantages for improving academic performance and self-efficacy. The use of metaverse applications in education and their potential impacts on students' intrinsic motivation and self-efficacy, however, has received relatively little research.

Online vs. face-to-face settings: Self-efficacy and intrinsic motivation

Education is undergoing a digital transformation that presents both opportunities and difficulties. While online learning can increase self-efficacy for some people, especially those who are tech-savvy, it might require an adjustment period for others, as we will come to see. Similarly, while flexibility and autonomy on online platforms can intrinsically motivate users, a blended strategy might enhance this motivation even further.

Metaverse applications in relation to self-efficacy and intrinsic motivation

The metaverse's emergence has sparked growing interest in its uses in education in recent years. This section looks at a number of studies that investigate how self-efficacy and intrinsic motivation are affected by metaverse applications, highlighting how important these factors are for learning.

In order to better understand how college students view the metaverse, Hwang et al. (2023) looked closely at their self-efficacy and motivation levels. The researchers discovered that students with various levels of motivation held different conceptions of the metaverse, using draw-a-picture analysis and surveys. Students with high levels of motivation tended to prefer experiential learning, which improved their growth mindsets, learning attitudes, and sense of self-efficacy. This study emphasizes how important motivation is in determining how students learn in the metaverse.

Jang and Kim (2023) focused on the effects of avatar personalization in metaverse environments, particularly in relation to fashion instruction. They looked at the impact of theoretical versus practical class modes on students' expectations and value judgments in the metaverse. Notably, it was discovered that active learning, positive expectancy, and value beliefs were enhanced by practical learning strategies. Additionally, a key factor in reducing these effects was students' creative self-efficacy. This study emphasizes how practical modes and customization can enhance learning opportunities in the metaverse.

The Technology Acceptance Model (TAM) was expanded by Al-Adwan et al. (2023) to examine the variables influencing students' intentions to adopt metaverse technology for educational purposes. Perceived usefulness, personal IT innovation, and perceived enjoyment were found in the study to be important enablers of students' behavioral intentions to adopt the metaverse. Additionally, it identified perceived cyber risk as the main deterrent. Perceived usefulness and perceived usability were found to be significantly influenced by self-efficacy, personal inventiveness, and perceived cyber risk. These results highlight the intricate interplay of variables affecting students' adoption of the metaverse.

Social cognitive theory was used by Alvarez-Risco et al. (2022) to evaluate people's intentions to engage in Facebook Metaverse activity, particularly during the COVID-19 pandemic. Their study emphasized how institutional support and technological literacy can increase one's self-efficacy for engaging in metaverse participation. Self-efficacy subsequently had a favorable impact on participants' intentions. The importance of self-efficacy and institutional support in influencing users' willingness to interact with metaverse technologies is highlighted by this study.

In his research, Choi (2022) explored the idea of immersion in metaverse applications and how it influences user engagement and recurrent use. The study examined variables like enjoyment, facilitating circumstances, and self-efficacy and found that these variables were crucial in enhancing users' immersion. A higher intention for continued use was subsequently correlated with greater immersion. This study emphasizes how crucial user involvement and immersion in metaverse experiences are.

These studies collectively shed light on the crucial connection between metaverse applications, self-efficacy, and intrinsic motivation in the context of education. They emphasize that key elements that educators and policymakers should take into account when utilizing the metaverse to improve learning environments and outcomes are motivation, customization, institutional support, and immersive experiences.

Gather.town

Gather.town is an online video conferencing platform designed for virtual conversations and business interactions in a 2D digital space. It aims to create a metaverse with human-like virtual interactions. Users receive customizable avatars for free movement, using camera, microphone, and chat functions for real-time communication. Gather is an intuitive, proximity-based video conferencing software. Users access private rooms, interact with shared documents, co-create using available objects, and connect with others. The platform offers full design features for up to twenty-five participants for free, with unlimited space creation. Although commonly used for conferences, its potential as a learning tool remains underexplored. Gather enables educators to pre-design learning spaces, communicate seamlessly between spaces and small groups, and offer tailored support in a synchronous online environment (McClure & Williams, 2021). This flexibility benefits students by fostering peer communication and a sense of identity within their learning community, while accommodating self-paced learning for developing self-regulated learning strategies (Themeli & Bougia, 2016).

To use Gather.town, educators register for a free account and choose from existing templates or customize virtual learning environments. These environments, set in scenarios like schools or hospitals, offer customizable furniture, games, and educational tools to enhance interactivity. Teachers can embed resources like videos and documents. Collaboratively created, these environments are accessible to students via a shareable link with optional password protection. Before entering, users create a customizable avatar without sign-in, choosing from various options for skin tone, hair, clothing, and accessories (Zhao & McClure, 2022).

In the 2D virtual environment of Gather.town, students interact with each other's avatars, activating a video conferencing (VC) feature in close proximity. This allows users to see, hear, and share screens. When distancing occurs, the VC feature partially disappears, simulating real-life scenarios for language practice, including everyday conversations. Students collaboratively engage with multimedia resources, such as watching videos or co-creating piano pieces. Teachers, as moderators, use a 'podium' object to broadcast instructions to all students, managing the lesson's pace. The chat function allows teachers to share links and documents either with all students or those in close proximity.

In addition to its application in virtual language lectures, Gather.town offers the unique capability of creating immersive language learning experiences. Through the platform, students have the opportunity to participate in virtual field trips to diverse global locations, providing them with an immersive encounter with the language and culture under study. This innovative approach fosters an environment where students can enhance their listening, speaking, reading, and writing skills in a dynamic and engaging manner.

Moreover, the platform serves as a conduit for interactive language immersion experiences. Students, transported virtually to different parts of the world, can submerge themselves in the language they are learning while gaining insights into the associated cultures. This immersive method not only enriches the language learning process but also provides a more dynamic context for honing language skills, contributing to a well-rounded and effective educational experience.

The use of Gather.town as a metaverse-like experience is particular to our study. This platform can be used by language teachers to create immersive language learning experiences that promote engagement and offer real-time language practice (Zhao & McClure, 2022). It improves engagement and interaction within online learning communities by incorporating gamified elements and avatars, making it a useful tool for language educators. According to a study by Latulipe and De Jaeger (2022), students preferred Gather.town over Zoom because it encouraged peer socialization, gave them more agency, and provided engaging interactions. This preference draws attention to its potential to promote group learning and raise student involvement. In addition, Gather.town's game-like environment and user-friendly features show promise in elevating engagement within higher education, thereby creating interactive virtual classrooms, according to Sriworapong et al.'s (2022) usability study.

Gather.town was successfully incorporated by Chen et al. (2022) into the educational game "Emergency Room," which was created to improve the learning process for nursing staff. The approach significantly increased learning effectiveness, according to preliminary findings, demonstrating Gather.town's potential as an effective training tool. Additionally, Gather.town's role in promoting self-paced learning in distance education was highlighted by McClure and Williams (2021), who noted that it provides unique opportunities for students to interact, customize their learning, and forge relationships in a virtual setting.

Self-efficacy and the mode of learning

According to Bandura (1977a), self-efficacy refers to a person's confidence in their ability to carry out actions required to produce particular performance outcomes. It is a crucial element that fuels learning, motivation, and academic success. Artino (2012) examined students' preferences for instructional formats. According to this study, students' self-efficacy belief significantly influenced their preference for online courses. Such a tendency raises the possibility that online learning environments might give some students a feeling of control over their education, thereby boosting their self-assurance when completing academic tasks. Wang et al. (2013) emphasized the connection between technology self-efficacy and course outcomes in online learning, which lends credence to this idea. According to their research, students' self-efficacy, or confidence in their ability to use technology effectively, is a significant predictor of how well they perform academically in online environments. However, not everyone finds it easy to make the switch to online learning. Johnson (2015) compared college students who attend on-campus and online universities. This study revealed differences in self-efficacy levels between the two groups, pointing to a potential learning curve for students transferring to virtual classrooms from traditional ones.

Intrinsic motivation and the mode of learning

According to Ryan and Deci (2000), intrinsic motivation refers to the innate interest and enjoyment a person derives from a task that motivates them to complete it. This intrinsic drive can be significantly influenced by the learning style. Joo et al. (2011) investigated the factors that affect the satisfaction and perseverance of online students. According to their research, intrinsic motivation and perceived utility are the main factors that influence how satisfied online students are. Such findings suggest that, as long as students believe the content is pertinent and helpful, the autonomy and flexibility provided by online platforms can intrinsically motivate students. Carpenter and Krutka (2015) highlighted the potential of microblogging platforms like Twitter in fostering intrinsic motivation among educators in a unique examination of educators' experiences. The study demonstrated the potential of online environments in igniting and maintaining intrinsic motivation, particularly when they are interactive and community-driven, even though it did not directly compare them to face-to-face settings. However, Broadbent (2017) found that blended learners—those using both online and traditional methods—exhibited greater intrinsic motivation when comparing online and blended learners. This suggests that a hybrid learning approach, fusing the best of the virtual and physical learning worlds, might foster intrinsic motivation.

Small group discussions: Face-to-face vs. online

In higher education classrooms, small group discussions have long been a popular pedagogical strategy. The development of online technologies has made it easier to use distance learning for small group discussions, particularly during and after the COVID-19 lockdowns. With the recent advancements in applications that resemble the metaverse, like Gather.town, the use of such applications in education may be in the future. Numerous studies have compared the effects of small group discussions held in person in a classroom setting versus those held remotely on student self-efficacy. In a blended learning course, Wang et al. (2019) compared the effects of in-person and online small-group discussions on students' self-efficacy. According to the study, students who participated in small group discussions online scored higher on self-efficacy tests than those who participated in in-person discussions.

Previous studies have looked into the advantages of using digital platforms in education. A study by Pellas et al. (2021) found that students felt more at ease taking part in online discussions than in conventional classroom settings. Students had favorable opinions of using digital platforms for group work, according to another study by Hernández-Sellés et al. (2019). According to this study, using digital platforms for education may increase student engagement and participation. Concerns exist, though,

regarding the negative effects that using digital platforms for education might have. According to Kim et al. (2019), online learning environments can cause students to feel lonely and disconnected. According to another study, digital platforms can make it difficult for students to collaborate and communicate effectively (Rababah, 2023).

Small group discussions in relation to self-efficacy and intrinsic motivation

Small group discussions and GSE

Small group discussions have a profound effect on students' self-efficacy, which is defined as a person's confidence in their ability to complete tasks or achieve goals (Bandura, 1977a). This effect is consistently highlighted by mainstream literature. The academic and learning paths of students are greatly influenced by their self-belief. Chang and Brickman (2018) found that participation in small group discussions led to an increase in students' confidence in their research abilities in a study looking at undergraduate research experiences.

In addition, Gokhale (1995) emphasized that college students who participated in small group discussions showed a notable improvement in their self-efficacy in relation to critical thinking. Kramarski and Mevarech (2003) found similar results, finding that students who participated in small-group metacognitive coaching and cooperative learning felt more comfortable tackling mathematical problems. In their study of the dynamics of productive cooperation in small groups, Webb et al. (1995) came to the conclusion that such a setting boosted students' self-confidence in teamwork and task completion.

According to Zimmerman and Kitsantas (2005), students who participate in regular group discussions, particularly those that are problem-solving-focused, consistently display higher self-efficacy than lone learners. In support of this, Hsiung (2013) proposed that online group discussions play a crucial role in boosting self-efficacy by providing a variety of perspectives and accessibility. Finally, Tolmie and Boyle (2000) concluded that structured peer interactions during small group discussions improved self-regulatory behaviors, which in turn increased self-efficacy.

The combined findings of the aforementioned studies highlight the transformative power of small group discussions in promoting increased student self-efficacy in a variety of educational contexts. Students learn new things and develop an innate confidence in their academic abilities through these cooperative interactions.

Small group discussions and intrinsic motivation

It is crucial to research intrinsic motivation in educational settings. Deeper learning, greater engagement, and improved retention rates among students have all been linked to intrinsic motivation, a self-driven and inherent interest in a subject or task (Deci & Ryan, 1985). Implementing small group discussions is one pedagogical strategy that frequently intersects with intrinsic motivation in research. Utilizing significant academic works, this literature review seeks to clarify the connection between student intrinsic motivation and small group discussions.

The Self-Determination Theory (SDT) framework, which Deci and Ryan introduced in 1985, offers fundamental insights into intrinsic motivation. The theory contends that learners exhibit intrinsic motivation when they experience autonomy, competence, and interpersonal connection during their academic endeavors. Despite not focusing solely on small group discussions, the SDT offers a theoretical framework for evaluating the efficacy of these discussions. In well-facilitated group environments where students experience ownership of their learning, share knowledge, and connect with peers. Thus, it is arguable that autonomy, competence, and relatedness are fostered.

Slavin (1996) emphasizes the idea of cooperative learning as a powerful tool for boosting intrinsic motivation by building on this. According to his research, cooperative pedagogical approaches can encourage learners' interdependence and personal accountability. Students become active participants in the ecosystem of a small group discussion, influencing and being influenced, creating a sense of shared responsibility for understanding the material. Johnson and Johnson (2009) explore this relationship in more detail by using the concepts of social interdependence. According to their research, small group activities that foster camaraderie and shared responsibility can stimulate intrinsic motivation. This idea is supported by the social interdependence theory. Discussion, debate, and analysis of ideas in a group foster a culture of collective learning, which makes tasks seem more manageable and increases individual motivation.

The effectiveness of these group dynamics, however, is not innate; rather, it depends on the makeup and circumstances of the group environment. This idea is emphasized by Cohen (1994) who contends that simply placing students in groups does not ensure success. Instead, group tasks' structured and purposeful design enhances intrinsic motivation. Students become more motivated when they understand the reason behind their discussions and can clearly see the results of their teamwork.

Järvelä and Järvenoja (2011) highlight self-regulated learning in collaborative contexts as they continue to investigate the internal dynamics of group interactions. Their findings suggest that students who are intrinsically motivated in a group setting exhibit improved self-regulation. In essence, learning motivation is honed and refined during group interactions, with peers acting as regulators and motivators for one another.

There is a longer-term perspective to consider, in addition to the immediate advantages. Hidi and Renninger (2006) first put forth the notion that situational interest, which is frequently fostered through enjoyable group activities, can develop into a significant and enduring individual interest. A topic's brief spark of interest from a single group discussion has the potential to grow into a lifelong passion or curiosity. During crucial educational phases, this ongoing interaction between group discussions and intrinsic motivation becomes

even more crucial. Cooperative learning techniques may provide a remedy for middle school students' waning intrinsic motivation, according to Anderman and Maehr (1994). Teachers may be able to rekindle the waning flame of intrinsic motivation by incorporating cooperative elements like small group discussions into the curriculum.

The importance of matching educational environments with students' intrinsic motivations is also emphasized by Lepper and Cordova (1992). Their findings point to a positive cycle in which student-driven activities, like group discussions, not only draw upon pre-existing motivations but also encourage and amplify them.

In conclusion, small group discussions are more than just a teaching strategy; they are a setting, a microcosm of the larger educational ecosystem. They act as crucibles where intrinsic motivation is nurtured and expressed when effectively structured and facilitated. Integrating pedagogical strategies that emphasize intrinsic motivation, like small group discussions, will remain essential for holistic student development as the educational landscape changes.

Methodology

Research design

The experimental group and the control group are two separate groups that make up the quasi-experimental research design used in this study. The control group participated in face-to-face small group discussions in a conventional classroom setting, while the experimental group participated in small group discussions via the online platform Gather.town. A pre-test and post-test using an altered Generalized Self-Efficacy questionnaire were done to assess the effect of these interventions on student self-efficacy.

Participants

This study involved 32 undergraduate students who were all enrolled in a second-year German as a second language speaking course at the University of Jordan. 16 students were assigned to the experimental group, and 16 students were assigned to the control group, dividing the participants equally between the two groups.

Setting

The research was done at the Faculty of Foreign Languages at the University of Jordan. The goal of the German as a second language speaking course that was provided in this environment was to improve students' language learning opportunities, with a particular emphasis on improving their oral communication abilities and competence in having real-world conversations in German. The pedagogical strategy of the course placed an emphasis on active student participation in dialogues that replicated real-life situations and were conducted entirely in German. Immersive role-playing activities were a special aspect of this course, where students took on roles such as airline agents or passengers making German flight reservations. The curriculum also included interactive scenarios that mimicked actual places like bakeries, post offices, and movie theaters. Students engaged in dynamic and reciprocal practices within these interactive settings, ensuring exposure to both contributory and receiving sides of conversational interactions. The goal of this immersive pedagogical approach was to give students engaging language learning opportunities so they could improve their conversational competence, gain an understanding of complex cultural nuances, and hone their ability to take part in real-world German conversations.

Instruments

The Generalized Self-Efficacy Scale (GSES)

A Generalized Self-Efficacy Scale (GSES) (See Appendix 1) was used to determine the degree of student self-efficacy. Schwarzer et al. created the 10-item GSES in 1995, and it is well known for its reliability and validity. It is intended to determine how confident a person is in their ability to handle various challenging situations. This tool offers data on participants' self-confidence in their capacity to overcome obstacles and complete a range of tasks.

The academic intrinsic motivation questionnaire

The subtleties of academic intrinsic and extrinsic motivation were examined by Shia (1998). Our study makes use of a modified version of Shia's (1998) academic intrinsic motivation survey (see Appendix 2). The creation of an "Academic Intrinsic Motivation" (AIM) tool to assist academic counsellors in comprehending and guiding students regarding their academic drives was a key objective of the research. The research indicates that intrinsic motivation is essential for college success. This is apparent as many students struggle with waning motivation during their time in college, leading them to seek academic advice. Shia uses Dev's (1997) definition of intrinsic motivation to highlight three key components: participation driven by curiosity, engagement for the pure joy of the activity, and the desire to contribute. Drawing on findings from Archer (1994), Miller et al. (1996), and Garcia and Pintrich (1996), the research also highlights the importance of a mastery goal.

Historical analyses draw attention to three student academic orientations: mastery, ego, and work avoidance. Using insights from Deci and Ryan (1985), Shia presents a nuanced view of intrinsic motivation, contending that it is rooted in a person's pursuit of competence and autonomy. According to Shia (1998), mastery orientation and the need for achievement are the two main components of intrinsic motivation, Shia's focus on only the "Mastery orientation" and "Need for achievement" is the result of their clear association with successful academic performance, a novel interpretation of intrinsic motivation emphasizing autonomy, and their agreement with the descriptors from the 16 Personality Questionnaire. In order to better equip academic counsellors in their advisory roles, Shia's research provides a deeper understanding of academic motivation,

highlighting the crucial roles of mastery and achievement. Therefore, in this article, we made use of only the statements pertaining to "Mastery Orientation" and the "Need for Achievement". The total number of statements was 21, given on a 7-point Likert scale (see Appendix 2).

Procedures

Prior to the start of the Spring 2022/2023 semester, the GSES and the adapted AIM were administered to the students in both the control and experimental groups to assess the baseline self-efficacy and intrinsic motivation levels in each group. The following six weeks of small group discussions were shared by both the experimental group and the control group. Using the Gather.town platform, the experimental group held online discussions, whereas the control group held their discussions in a traditional classroom setting. In a post-test evaluation to assess any changes in self-efficacy and intrinsic motivation attributed to the interventions, each participant completed the GSES and AIM again with the appropriate adaptations.

Data analysis

The results from the modified Generalized Self-Efficacy questionnaire were compared in order to assess any differences in self-efficacy levels between the two groups. Descriptive statistics, such as means and standard deviations, were used in the data analysis process to offer insights into the gathered data.

Results

The findings from an investigation into the effects of small group discussions on students' intrinsic motivation and self-efficacy (conducted in-person or online using Gather.town) are presented in this section. The research questions will each be addressed separately in order to accomplish this. We begin by confirming the accuracy and dependability of the IM and GSE scales.

Consistency validity and reliability

Self-efficacy scale

Internal consistency validity. The degree to which all of the questionnaire's items are consistent with the dimension to which they belong is referred to as the internal consistency validity of the scale's items. This indicates that each measurement only measures what it was designed to measure. The Pearson correlation coefficient was therefore calculated between each item's score and the scale's overall score. All of the correlation coefficients between the scale's individual items and total score were found to be statistically significant at a level of 0.05, ranging between 0.630 and 0.804. All of these results are statistically significant, demonstrating the Self-Efficacy Scale's high level of internal consistency. As a result, the scale's final version has 9 items.

Reliability. The Self-Efficacy Scale was tested for reliability using Cronbach's Alpha coefficient. The scale's overall score was a 0.86. According to the standards established by Nunnally and Bernstein (1994, pp. 264–265), who suggested 0.70 as the minimum threshold for reliability. This result suggests that the Self-Efficacy Scale has an acceptable level of reliability and can be trusted for field application.

Intrinsic motivation scale

Internal consistency validity. The Pearson correlation coefficient was calculated between the scores of each item and the scale's overall score in order to confirm the internal consistency validity of the Intrinsic Motivation Scale. At a level of 0.05, it was determined that all correlation coefficients between the scale's individual items and its overall score were statistically significant. They ranged from 0.421 to 0.867. All of these numbers are statistically significant, which suggests that the Intrinsic Motivation Scale has good internal consistency. As a result, the scale's final version has 20 items.

Reliability. The Intrinsic Motivation Scale's reliability was evaluated using Cronbach's Alpha coefficient. The scale's overall score was a 0.94. According to Nunnally and Bernstein's (1994, pp. 264–265) criteria, which recommended 0.70 as the minimum threshold for reliability, this value shows that the Intrinsic Motivation Scale has a high degree of reliability and can be relied upon for field application.

Results regarding GSE

This section presents the results relating to the first research question; namely, "*Are there statistically significant differences at the α=0.05 level between the mean scores of students in the control and experimental groups in terms of their self-efficacy, attributed to the method of teaching (conventional vs. conducting small group discussions (either in-class or online via Gather.town))?*"

To answer this question, the mean scores and standard deviations of the responses from both study groups were calculated based on the pre- and post-measures of self-efficacy.

Table 1: Mean scores and standard deviations of the responses from the study groups on the pre- and post-self-efficacy measures.

Teaching Method	no	pre		post	
		Mean	Std	Mean	Std
Traditional	17	2.37	0.43	2.93	0.68
Group Discussions	16	2.40	0.38	3.51	0.24
Total	33	2.38	0.40	3.21	0.58

It can be discerned from Table 1 that there are apparent differences between the mean scores of the responses from both study groups on the self-efficacy scale, based on the group variable. The control group achieved a mean score of 2.932.93, which is lower than the mean score of the experimental group with a mean of 3.513.51. To determine whether the differences between the means are statistically

significant at the α=0.05 level, the Analysis of Covariance (ANCOVA) was applied. The results of the ANCOVA analysis are presented as shown in Table 2.

Table 2: Analysis of Covariance (ANCOVA) to determine the significance of the differences in the responses of the study groups on the pre- and post-measures of self-efficacy.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Pre-intervention Self-Efficacy	0.551	1	0.551	2.149	0.153	0.067
Group	2.605	1	2.605	10.154	0.003*	0.253
Error	7.696	30	0.257			
Corrected Total	10.947	32				

* The mean difference is significant at the 0.05 level.

Table 2 indicates that there are statistically significant differences at the α=0.05 level between the mean scores of the students on the pre- and post-self-efficacy scale according to the group variable (experimental and control). The value of F was 10.15410.154 with a significance level of 0.0030.003. To determine the effect size, the eta-squared value was calculated, which was 0.2530.253. This explains that 25.3% of the variance in student responses on the self-efficacy scale can be attributed to the group variable, while the remainder is due to other uncontrolled factors.

To determine which group had the advantage in terms of the differences in student responses on the pre- and post-measures of self-efficacy, the adjusted post-test means were extracted. Table 3 displays this information.

Table 3: Adjusted post-test means and standard errors for student responses on the self-efficacy scale.

Group	Mean	Std. Error
Control	2.94	0.12
Experimental	3.50	0.13

Table 3 reveals that the adjusted mean scores of student responses on the self-efficacy scale for the control group were 2.942.94, which is lower than the experimental group's mean score of 3.503.50. This indicates that the difference favored the experimental group, which was taught using the method of small-group discussions. These results highlight the capability of small group discussions to enhance students' self-efficacy.

Results regarding intrinsic motivation

This section presents the results relating to the first research question; namely, "*Are there statistically significant differences at the α=0.05 level between the mean scores of students from both the control and experimental groups in terms of intrinsic motivation attributed to the teaching method (conventional vs. small group discussions (either in-class or online via Gather.town))?*"

To answer this question, the mean scores, and standard deviations of the responses from the two study groups on the pre- and post-measures of intrinsic motivation were calculated.

Table 4: Mean scores and standard deviations of the responses from both study groups on the pre- and post-measures of intrinsic motivation.

Teaching Method	no	pre		post	
		Mean	Std	Mean	Std
Traditional	17	3.14	0.85	3.86	0.85
Group Discussions	16	3.46	0.45	4.76	0.50
Total	33	3.30	0.70	4.30	0.83

It is evident from Table 4 that there are apparent differences between the mean scores of responses from the two study groups on the intrinsic motivation scale, according to the group variable. The control group (which was taught using the conventional method) had a mean score of 3.863.86, which is lower than the mean score of the experimental group (which was taught using the method of small group discussions) at 4.764.76. To ascertain if the differences between the means are statistically significant at the α=0.05 level, an Analysis of Covariance (ANCOVA) was employed. The results of the ANCOVA are presented in the following table.

Table 5: Analysis of Covariance (ANCOVA) to determine the significance of differences in responses from the two study groups on the pre- and post-measures of intrinsic motivation.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Pre-intervention Intrinsic Motivations	9.721	1	9.721	51.014	0.000	0.630
Group	3.332	1	3.332	17.486	0.000*	0.368
Error	5.716	30	0.191			
Corrected Total	22.212	32				

* The mean difference is significant at the 0.05 level.

Table 5 indicates the presence of statistically significant differences at the level α=0.05 between the mean scores of the students on the pre-and post-intrinsic motivation scale according to the group variable (experimental and control). The F value reached 17.48617.486 at a significance level of 0.0000.000. To understand the effect size, the eta-squared value was calculated, which amounted to 0.3680.368. This explains that 36.8% of the variance in students' responses on the intrinsic motivation scale can be attributed to the group variable, while the remainder is due to other factors that are not controlled for.

To determine in whose favor the difference was concerning students' responses on the pre- and post-intrinsic motivation scale, the adjusted post-test means were extracted. The following table illustrates this.

Table 6: Adjusted post-test mean scores and standard errors of students' responses on the intrinsic motivation scale.

Group	Mean	Std. Error
Control	3.98	0.11
Experimental	4.63	0.11

From Table 6, it can be observed that the adjusted mean responses of students on the intrinsic motivation scale for the control group were 3.98. This is lower than the mean for the experimental group, which stood at 4.63. Such a difference

is indicative of the experimental group, which was exposed to the method of small group discussions, outperforming the control group. These findings underscore the efficacy of employing small group discussions in enhancing students' intrinsic motivation.

Discussion

The landscape of education is quickly changing, clearly moving in the direction of digital platforms. This profound and undeniable shift raises important issues, particularly in relation to its impact on pedagogical practices. The focus of our study emerged from these considerations as the function and effectiveness of small group discussions conducted via different mediums, primarily face-to-face and Gather.town. Our goal was to carefully examine how these platforms affected students' self-efficacy and intrinsic motivation while grounding our conclusions in a diverse range of academic viewpoints.

Bandura's (1997a, b) theory remains a pillar of the conversation on self-efficacy. According to Bandura's theory, self-efficacy results from a person's confidence in their ability to carry out tasks. The results of our experiment were illuminating. Comparing their peers in face-to-face settings with those who participated in discussions via Gather.town, the students who did so demonstrated higher levels of intrinsic motivation. This suggests that platforms like Gather.town may be removing some restrictions, possibly the social anxieties or the numerous outside distractions that are common in conventional settings. Therefore, these virtual environments might help students feel more confident, which would increase their commitment to and participation in discussions (Stodel et al., 2006).

The framework developed by Ryan and Deci (2000) was helpful when examining intrinsic motivation. Autonomy, competence, and relatedness were identified as the three pillars supporting intrinsic motivation in their model. The manifested motivation for the cohort using Gather.town may have been a result of amplified feelings of relatedness and autonomy. Students may sense increased control and a sense of community resulting from a shared online experience within these digital boundaries. The results of Kim et al. (2019) support this viewpoint. Their study demonstrated how these virtual environments for collaboration can boost feelings of relatedness and autonomy, which in turn can spur intrinsic motivation. The groundbreaking study by Deci et al. (1999) on motivation in education is becoming ever more relevant in our technologically advanced age. Their claim that meeting students' fundamental needs can have a significant impact on their motivation raises the question of whether platforms like Gather.town are inherently more suitable for this. Bawa (2016) offers an intriguing perspective in using the compelling lens of intrinsic motivation as the key to student retention in online learning environments. Our research, which highlights Gather.town's potential advantages, can be seen as a road map for educators, instructing them on how to use digital tools to promote motivation and engagement.

Kuh (2001) contends that deep learning experiences are essential for intrinsic motivation. Online platforms offer a wealth of resources that, depending on how they are used by educators and students alike, can either promote or impede deep learning. Platforms like Gather.town can provide novelty and a novel approach to engagement, but the depth of learning experiences cultivated within these platforms may be crucial to sustaining intrinsic motivation. Although our findings demonstrate the value of platforms like Gather.town, it is critical to integrate them into a broader academic conversation. For instance, Zimmerman (2000) asserted that although social barriers on digital platforms may increase self-efficacy, they may also pose difficulties for students' ability to self-regulate. Additionally, the delicate balance between synchronous digital tools and autonomy was discussed by Giesbers et al. (2013), a factor that educators must be aware of.

In conclusion, our research reveals the complex dynamics involved in selecting the format for small group discussions. Platforms like Gather.town should not be disregarded because of their potential to affect students' intrinsic motivation and self-efficacy. Our findings highlight the need for flexibility, vision, and a dedication to utilizing the best aspects of both traditional and digital domains as the educational paradigm continues to change in response to technological advancements.

Conclusion

The introduction of digital learning platforms has rekindled interest in comparing the relative merits of traditional and online learning strategies. Our study, which was conducted in the context of a German language course, was designed to clarify the implications of these two learning styles, particularly as they relate to group discussions and students' self-efficacy and intrinsic motivation.

Our findings demonstrated a clear benefit for the online platform Gather.town, which addressed our first research question regarding the effect of the medium on students' sense of self-efficacy. Over the course of the six-week period, the students who participated in group discussions through this medium showed a more pronounced increase in their self-belief and confidence in their language skills. In contrast, the control group showed growth but not a significant increase in self-efficacy, despite still showing growth. Moving on to our second research concern, intrinsic motivation, the digital medium once more emerged as the front-runner. Students in the Gather.town group showed increased motivation, indicating that the online setting may have provided elements that more closely matched students' intrinsic motivations. This increased motivation may have been sparked by Gather.town's freedom, adaptability, and distinctive engagement features.

The wider implications of our research must also be emphasized. Our findings support the idea that, in some circumstances, digital platforms can be more effective than conventional techniques at fostering both motivation and confidence. This is not meant to downplay the importance of in-person interactions, but rather to emphasize the potential

advantages of Gather.town-style platforms in the current educational paradigm. It calls on institutions and educators to reevaluate their pedagogical tools and methods, possibly fusing the traditional and the digital to capitalize on the advantages of both. In conclusion, our research supports the idea that digital platforms have a transformative potential for influencing educational outcomes. It is crucial for stakeholders to stay aware of these insights as education continues to follow the digital trajectory, using them to promote the best possible student development. Despite the fact that this study was limited to a particular course and platform, it opens the door for future research in a variety of fields and environments, promoting a comprehensive understanding of the digital evolution in education.

Limitations

While our research provides insightful information about the changing nature of digital education, particularly in relation to student motivation and self-efficacy, it is important to understand its inherent limitations in order to put the results into proper perspective.

Our study's potential to be generalized is constrained by its focus on a single German language course. The findings may not be directly transferable to other courses or more general educational settings, despite the fact that they are instructive within this particular academic context. In addition, while the research's exclusive use of the Gather.town platform offers detailed insights into its effectiveness, it may not accurately reflect the effectiveness or difficulties of other digital platforms. The dynamics and features of each platform vary, so what we saw with Gather.town might not apply to another digital environment at all. Additionally, the 33-student sample size has limitations. Even though smaller samples are simpler to handle and analyze, they might miss the complex nuanced variations found in larger student populations. The six-week study period, while sufficient for our goals, may not provide a long-term view of the sustainability of the advantages associated with continued use of websites like Gather.town. Furthermore, despite the fact that the students' varied backgrounds can be extremely important, we did not go into great detail about them. Depending on their cultural, educational, or technological backgrounds, students' ability to adapt and respond to digital platforms can vary greatly, potentially biasing our findings. Finally, our reliance on surveys to measure motivation and self-efficacy poses its own set of difficulties. Even though surveys are good tools for gathering information, they are by their very nature subjective. Due to its subjectivity, self-reported data may contain biases or inaccuracies that could skew the results.

In conclusion, it is important to proceed cautiously with these conclusions even though our findings highlight the potential of websites like Gather.town in contemporary education, especially for courses like the one in our study. To develop a comprehensive understanding of the constantly changing world of digital education, more extensive research will be necessary that takes into account courses of different disciplines, larger and more diverse student populations, and multiple online platforms.

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