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The Effect of Games Simulation in Improving Secondary Students' Academic Performance

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ABSTRACT

The main purpose of the study was to find out the effect of simulation games as an intervention program in teaching-learning economics to improve students' academic performance. The study adopts a mixed method. 27 (14 girls and 13 boys) grade twelve students in one higher secondary school participated in the study. The students were selected through non-probability convenient sampling techniques. The study revealed that the intervention program: and simulation games make concepts, ideas, and hypotheses easier to understand. The students have a positive opinion of simulation games used in teaching-learning. Simulation games make teaching-learning interesting, enjoyable, and fun. Through simulation games, students can score high marks on the class test. Students were engaged in self-assessment, self-awareness, self-monitoring, and reflective processes. However, the study revealed that simulation games are time-consuming and teachers need more time and effort for preparation and implementation. Simulation games are not always effective in teaching all micro and macroeconomics concepts.

Keywords:

Games Simulation; Students; Teachers.

ABSTRAK

Tujuan utama dari penelitian ini adalah untuk mengetahui pengaruh permainan simulasi sebagai program intervensi dalam pembelajaran ekonomi untuk meningkatkan prestasi akademik siswa. Penelitian ini mengadopsi metode campuran. 27 (14 perempuan dan 13 laki-laki) siswa kelas dua belas di satu sekolah menengah atas berpartisipasi dalam penelitian ini. Para siswa dipilih melalui teknik non-probability sampling. Studi tersebut mengungkapkan bahwa program intervensi: permainan simulasi membuat konsep, ide, dan hipotesis lebih mudah dipahami. Siswa memiliki pendapat yang positif terhadap permainan simulasi yang digunakan

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dalam proses belajar mengajar. Permainan simulasi membuat belajar-mengajar menjadi menarik, menyenangkan, dan menyenangkan. Melalui permainan simulasi, siswa dapat memperoleh nilai tinggi dalam ujian kelas. Siswa terlibat dalam penilaian diri, kesadaran diri, pemantauan diri dan proses reflektif. Namun, penelitian tersebut mengungkapkan bahwa permainan simulasi memakan waktu dan guru membutuhkan lebih banyak waktu dan usaha untuk persiapan dan implementasi. Permainan simulasi tidak selalu efektif dalam mengajarkan semua konsep ekonomi mikro dan makro.

Kata Kunci:

Simulasi Game; Siswa; Guru.

1. Introduction

Students' academic performance in economics is a serious concern for teachers and students. The poor performance of students in economics in the Bhutan Higher Secondary Education Certificate (BHSEC) examination has been a worrying matter for economics teachers across the nation. This poor performance has resulted in students opting for other optional subjects such as Environmental Science, Media Studies, and Agricultural Studies. Students find it easier to comprehend and score good marks in these subjects, although these subjects have poor ability ratings for higher education admission in Bhutan. Some schools have stopped offering economics because students' low scores affect the average (Rinzin, 2019b) and the ranking of the schools.

Boris (2020, p.74) argues that a "teacher may profess to hold fifteen years' experience, but the experience means nothing if he keeps repeating the same thing without bringing innovation into his teaching." The effectiveness of the teaching-learning process depends mainly upon the teacher's methodology (Jibrin & Zayum, 2012; Yadav, 2006). According to the NCERT (n.d.); Jibrin & Zayum (2012), one of the main reasons for the poor performance of students in economics is the poor selection of teaching-learning methodology. One study by Dorji (2020a, p.44) observed that many teachers were not using pedagogy such as "cooperative learning, problem-solving, student research, role play, differentiated learning, experiential learning, concept mapping, flow charts, simulation games, project-based learning, learning through feedback, team teaching, and co-teaching, live consultancy assignments, and pedagogy of service-learning" in the classrooms. There is a long history of teacher resistance to pedagogical changes in Bhutan (Sherab, 2013; discovery Education & REC, 2009). The NCERT (n.d.) found out that in the innovative and digital world, many teachers still use traditional or conventional teaching methodologies such as lectures. Teachers adopt traditional teaching methodologies to cover the content-heavy curriculum on time. Although the lecture method helps teachers teach economic concepts, it does not help develop enough cognitive learning skills nor motivate students. It does not promote students' participation in the teaching-learning process. It reduces the students' interest in the subject. As a result, it limits students' performance up to the knowledge level and does not develop creating and application abilities (Vlachopoulos & Makri,

2017). An innovative approach to teaching economics must be undertaken to make students think like economists or scientists. Innovative teaching methodology creates interest in learning economic concepts and students' participation in the teaching-learning process. Students must be engaged in the curriculum rather than teachers limiting the transaction via a blackboard and textbook (NCERT, n.d). Many studies recommend teachers adopt a more active and collaborative teaching-learning process. The simulation game is one of the most researched teaching methodologies in teaching-learning economics. Simulation games provide a crucial opportunity to motivate and engage students to learn theoretical concepts, terms, facts, conventions, trends, and principles. Many economics concepts, terms, facts, conventions, trends, principles, generalizations, assumptions, and hypotheses can be taught using simulation games. According to NCERT (n.d.), topics such as Fixed Cost and Variable Cost (game), Perfect Competition (Role Play), Price Elasticity of Demand (game), Aggregate Demand (game), and Value Added (Roleplay) can be taught through simulation games. The simulation games methodology shifts teacher-centered teaching to a student-centered teaching-learning, allowing students to acquire problem-solving and communication skills (Auman, 2011). Literature supports that students have a positive attitude toward simulation games, thus, promoting the use of simulation games in education and teaching (Vlachopoulos & Makri, 2017).

1.1 The objective of the Study

So far, no study has been carried out on the effect of using simulation games as a methodology in Bhutanese classrooms. A teacher is expected to be a researcher to examine pedagogy, ways and means to improve teaching-learning, and ways to contextualize teaching-learning. According to Dorji (2021, p. 235), "the teaching-learning becomes effective if the curriculum is implemented correctly in the classroom with appropriate teaching strategies, instructional tools, and assessments. The teacher must practice strategies that motivate students and support achieving desired learning outcomes".

The study's main aim was to examine the effect of using simulation games in the teaching-learning process to improve academic performance in higher secondary schools.

1.2 Research Question

Do simulation games help students learn economic concepts, terms, and related economic information and enhance academic performance?

1.3 Significance of the Study

Teaching economics in higher secondary school is often said to be a very demanding and rewarding subject. The researcher believes that innovative teaching methodology might improve students' academic performance. The study might be useful to other economics teachers with similar teaching-learning situations. The study would also allow other teachers to reflect and find an avenue to improve their teaching practices (Choeda, Drukpa, Yuden, Dukpa, Chuki, 2018). According to the Bhutan Professional Standards for Teachers, all teachers must adopt a student-centred teaching

methodology from 2021 (MoE, 2020).

1.4 Situation Analysis

Economics is offered as an optional subject in grades IX to XII in Bhutan. The researcher has taught economics in grade XII since 2016, and it was observed that students performed poorly in economics in the BHSEC examinations. The researcher found that most students opt for economics in class XI and XII without learning any fundamentals of economics in grades IX and X. Generally, students who opt for economics from grade IX find it easier to understand economic concepts, facts, terms, and theories. This is because the majority of topics learned in grades XII are built on what has already been learned in grades IX and X.

The BHSEC examinations in 2018 and 2017 recorded the worst economic performance (Rinzin, 2018; Rinzin, 2019a), with a national mean score of 45.53 in 2018 and 49.53 in 2017. For the researcher's higher secondary school, the mean score for economics in 2018 was 42.0, and 41.24 in 2017. The national mean score of economics in 2019 was 51.17. At the same time, the mean score for economics in the research school was 49.24. The mean score measures the quality of academic performance in examinations (BCSEA, 2020).

The researcher observed many students study economics from prescribed textbooks and class notes and practice various past examination papers to prepare for the examinations. Although students attentively attend classes, their academic performance is poor. The researcher was concerned and decided to examine the issue and improve students' academic performances. Thus, a simulation game methodology was used as an intervention program to improve student learning and academic achievements.

1.5 Competence

The researcher taught economics in grades XI and XII for four years. The researcher was deeply concerned about the continuous economic poor performance of students. The researcher attended a three-day workshop on 'Action Research' organized by Dechencholing Higher Secondary School. The researcher referred to 'A Guide to Action Research: Enhancing Professional Practice of Teachers in Bhutan,' a publication of the REC, 2018, which provides practical guidance for conducting action research in education. The researcher also had the support of the school management and colleagues who attended action research workshops at the school as well as at Paro College of Education in July 2018.

1.6 Critical Friend

According to Choeda et al. (2018, p.4), "the purpose of having a critical friend is to ensure that the researcher does not make narrow or biased interpretations of data." One of the history teachers, a colleague at the same school who had studied action research at Paro College of Education, agreed to be a critical friend of the researcher. He has also attended workshops on 'Action Research' organized

by the school. The researcher and the critical friend reviewed the role of the critical friend as mentioned in the 'A Guide to Action Research: Enhancing Professional Practice of Teachers in Bhutan' by REC. The critical friend, thus, is clear about the role in action research.

2. Methods

A pragmatic paradigm guided the study. The study adopts a mixed-method approach. The study began with a quantitative approach followed by qualitative and quantitative approaches (Cresswell, 2014). The researcher used a pre-test (class test 1) and post-test (class test 2). The class test 1 and 2 questions were purely based on the concept/content taught in the classroom. 5 Point Likert Scale questionnaire was used to collect quantitative data after the simulation games. Class observations of the general behavior of each student in each group were done to collect the data for the qualitative data.

2.1 Population and Sample

Twenty-seven students of one grade XII of one higher secondary school participated in the study. The student participants were selected through non-probability convenient sampling techniques. There were 28 students (15 girls and 13 boys) in one grade XII. Of the 28 students, 22 (13 girls and 9 boys) had not taken economics in grades IX, and X. Economics subject is introduced to students in grades IX and X as a simple depiction of economic aspects closer to their real life. As students enter higher secondary school, economic theories, concepts, terms, facts, conventions, trends, principles, generalizations, assumptions, hypotheses, problems, and processes are introduced to students in abstract language. The student participants came from mixed socio-economic status and gender between 18-20 years old.

2.2 Quantitative Data Collection Instrument

2.2.1 Pre-test (baseline data)

The objective of conducting the pre-test was to find out the knowledge level of students and to analyze the test scores of class test 1 before implementing the simulation games. Class test 1 was conducted on March 10, 2019, with a writing time of 50 minutes. Class test 1 covered the topic: circular flow of income and national income. Class test 1 consists of six short answer questions with 20 marks. The total mark of 20 was converted to 100 for easy tabulation. The class test 1 response was graded and converted to 2% for continuous internal assessment. The score of class test 1 was used as the baseline data for the study.

2.2.2 Post-test

The objective of conducting the post-test was to find out the students' level of performance in economics after the implementation of simulation games for three weeks. Like the pre-test, the post-test data were collected through class test 2. Class test 2 was conducted on June 1, 2019. Similar

questions to class test 1 were prepared for class test 2. The pre-test (class test 1) and the post-test (class test 2) were compared to examine academic performance before and after the implementation of simulation games. The pass percentage and mean mark of class test 1 and class test 2 were compiled and verified.

2.2.3 Learning Satisfaction Analysis

5-Point Likert Scale (5=Strongly Agree, 4= Agree, 3= Neutral, 2= Strongly Disagree, 1= Disagree), a Survey questionnaire was administered to find out students' feelings and attitudes towards the three-week simulation games. The data collected from the survey questionnaire were analyzed via mean and standard deviation to determine the feelings and attitudes towards the three-week simulation games.

2.2.4 Intervention Program

The baseline data collected through class test 1 and observation of the students in the classroom showed the need for an immediate intervention program. Through the existing literature review, the researcher adopted simulation games methodology as an intervention program to teach economics in grade XII. Its effect on students' learning was observed. Simulation games were implemented for three weeks in the classroom. A sample lesson plan (Appendix A) was followed.

There were many average students in the class, and the researcher felt that the simulation games were more suitable for teaching economics in higher secondary schools to improve academic performance. This method was also adopted since 90 percent of students come from low socio-economic families (NCERT, n.d.).

2.3 Qualitative Data Collection Instrument

2.3.1 Observation

Six rounds of observations were carried out during the entire period of the study. The three observations were general on how students participated in the teaching-learning process. The purpose of the observations was to see the students' behavior before and after the implementation of the simulation games. Day-to-day anecdotal records were maintained for each student.

2.4 Data Analysis

SPSS version 24 was used to analyze class tests 1, 2, and 5-Point Likert Scale Survey questionnaire. Descriptive statistics were used to explain the quantitative data via percent, mean, and standard deviation. The qualitative data collected through observations were coded, and themes were generated. The data collected through the class tests, observations, and surveys were triangulated to confirm the result and inform the discussion.

2.5 Ethical Clearance

The researcher informed the aim and objective of the study and sought the opinion of class twelve student participants. The students were briefed verbally about the planned study and its purpose to ensure proper usage. They were ensured anonymity and confidentiality and briefed on how the data would be used and protected. Parents' concerns were not asked about as students were above 18 years old. The student participants were not informed that they could discontinue participation at any time. The study was carried out as a part of the teaching-learning process. The researcher also sought permission from the school management to carry out the study. The critical friend and his role during the study were briefed to the class.

3. Results and Discussion

3.1 Pre-test and post-test

Table 1. Pass percentage and mean marks in class test 1

Student Participants	Pass Percentage	Mean Marks
Female	66.7	48.3
Male	41.7	36.9
Total	54.2	42.6

The marks scored by the students during class test 1 were disheartening, as shown in Table 1. The pass percentage was 54.2, and the mean mark was 42.6. The researcher identified the underlying issues and the challenges faced by the students in not performing well in the economics test. The interaction with students revealed the primary reason for the teacher's use of traditional teaching methodology. As many students studied economics for the first time, they faced difficulties understanding economic concepts, facts, principles, and theories. The researcher's teaching methodology primarily included lecture cum demonstration, group work, group discussion, and PowerPoint presentations. Students listened passively and engaged in rote memorization without understanding the concepts, terms, facts, conventions, trends, principles, and generalizations. 28.6 percent of students were found motivated, asked several questions, and sought clarification. The frequency of participation was less in the classroom. 40 percent of students did not actively participate in the activities. During the learning activities, 4 percent of students discussed in private groups and looked around the class. Few students had to be reminded by the researcher to participate in the learning activities. During the pre-test, the researcher saw that 4 percent of students were lazy and missed many classes. Only high achievers were active in the classroom.

Table 2. Comparison of Pass Percentage and Mean Marks of Economics In-Class Test 1 and Class Test 2

Student Participants	Class Test 1		Class Test 2	
	Pass Percentage	Mean Marks	Pass Percentage	Mean marks
Female	66.7	48.3	100	63.66
Male	41.7	36.9	91	54.16
Total	54.2	42.6	96.29	59.44

While comparing class test 1 and class test 2, there was an increase in the mean marks after the simulation games, as shown in Table 2. The overall performance and mean marks of economics increased after the simulation games. The results support that when students were taught using simulation games, students could score high marks on the class test.

3.2 Observation

The researcher observed that simulation games were relevant in teaching economics. The students actively participated in learning activities. The researcher also observed that class activities were lively, enjoyable, and responsive. Students readily participated in learning activities. Simulation games brought a wide variety of experiences into the classroom. Students became part of learning and took the lead role in teaching-learning. The researcher's role became more of a guide and facilitator in the teaching-learning process. The teaching methodology was more student-centered.

Table 3. Learning satisfaction analysis

Sl. No	Learning Satisfaction Level	N	Mean	Std. Deviation
1	The teacher engaged me actively and meaningfully	27	4.4444	.64051
2	The simulation games methodology was helpful	27	4.7407	.44658
3	I was encouraged to participate in the discussion during the group activity	27	4.6667	.48038
4	Simulation games make learning interesting, enjoyable, and fun	27	4.8148	.39585
5	I learn better with simulation games methodology	27	4.5926	.57239
6	Simulation games made it easier to understand concepts, hypotheses, and theories.	27	4.4444	.69798
7	Simulation games promote cooperation, team spirit, collaboration, and respect for peers	27	4.5556	.50637
8	Simulation games help us in developing important skills such as decision-making, problem-solving, communication, and negotiation	27	4.7037	.46532
9	Simulation games enhance my motivation to learn in the classroom	27	4.2963	.60858
10	I get good marks in economics when simulation games methodology is used in the classroom	27	3.9630	.64935
11	My academic performance improved after using simulation games.	27	4.2593	.71213
12	I recommend simulation games to teach class twelve students	27	4.7037	.60858

Based on the mean score of the 5-Point Likert Scale in Table 3, students prefer simulation games methodology in the teaching-learning process. Effective simulation games make concepts, hypotheses, and theories easy to understand. Simulation games make teaching-learning interesting, enjoyable, and fun.

The triangulation of the data from class tests, observations, and the survey questionnaire revealed the overall effectiveness of the simulation games. Class test 2 shows a significant improvement in the students' test scores. The researcher observed that students actively participated in the lessons and shared positive things about the simulation games. The survey questionnaire also

revealed that students have a positive attitude toward using simulation games and recommended their use in teaching-learning. The results and discussion of the study were in agreement with the previous literature review on simulation games, particularly by NCERT (n.d,); Vlachopoulos & Makri (2017).

3.3 Reflection of the Study

The researcher was glad that the researcher had systematically completed teaching-learning economics through simulation games. The researcher has better understood the teaching-learning process using simulation games. A simulation game is new for the researcher. However, the researcher has learned simulation and role-play strategies at the erstwhile National Institute of Education, Samtse (now Samtse College of Education). The researcher realized that simulation games gave him confidence and insight to teach and learn economics. The researcher would teach economics through simulation games henceforth in relevant topics.

The researcher also observed that students have learned more and shared ideas by working in groups. The use of simulation games promotes learning relevance and also entertains students. Simulation games improve retention and enhance the learning process. The researcher found simulation games can potentially engage students in deeper learning. It empowered students to understand lessons or topics instead of surface learning that requires only memorization and rote learning. Simulation games provide more insightful information than a textbook in delivering the lesson.

Although many topics, such as fixed cost and variable cost, price elasticity of demand, and aggregate demand, can be taught using simulation games, students face problems during group activity and role play due to the sheer size of students in a small classroom. Moreover, the Bhutanese curriculum is centralized and exam-oriented, emphasizing assessment of learning and not supporting student-centered teaching. Using situation games, teachers and students learn valuable lessons, although completing the syllabus on time can be hindered.

In simulation games, the teacher's workload increases. Teachers have to plan well before the implementation of the complete game. The simulation requires proper planning, execution, follow-up, and reviewing. It is also difficult for the teacher to identify the topic that can be taught through simulation games. The researcher also felt students were burdened with increased workload and responsibility within the limited time to complete the tasks. The researcher also felt that teachers play a vital role in developing a keen interest for students to explore, discover, think, and deliberate on different economics lessons. Using simulation games in teaching-learning can be overwhelming and burdensome to students and teachers.

During the learning activities, the researcher observed that simulation games generate more noise in the classroom. Such noise might disturb nearby classes. Since the grade XII economics syllabus is vast and overloaded with content, simulation games may not be effective and popular because both the teacher and the students strive hard to complete the syllabus within the given time.

Participating in simulation games enabled students to learn and remember a set of economic concepts and ideas in less time than students taught in a traditional lecture-based methodology.

According to NCERT (n.d.), the concept of the simulation game is based on the concepts 'simulation' and 'games'. Wilson (1987) outlined simulation means an imitation of reality. It is the imitation of the real thing on a smaller scale. Under simulation, the participants carry out an exercise representing a real system, a procedure, a process, or parts of it. Simulation involves either mental skills or physical skills or both mental and physical skills. Similarly, Megarry (1989) argues that a simulation is a working model of reality. Simulations in education are often simplified or accelerated representations, which allow students to explore the situation. Megarry (1989) also highlighted the feature of simulation, such as (i) simulation is an artificial situation based on reality or some of the components of reality, (ii) simulation provides a real learning environment for students, and (iii) simulation involves students actively in the teaching-learning process.

Wilson (1987) defined a game as a competition or exercise played by adversaries within the rules to win the game. Megarry (1989) supported this definition that one or more players play a game, cooperating or competing towards a definite objective with an agreed set of rules. According to NCERT (n.d.), there are seven features of games: (i) a Game is a purposeful activity and contains the participants carry out a set of objectives, (ii) a game to achieve the predetermined objectives, (iii) a game has certain rules to be followed by the participants during the activity, (iv) game is time-bound and has a time limit. (v) The game is played actively and needs cooperation among the participants. (vi) Feel of competition is always present among the participants. (vii) There is a scoring system in the game to declare the results NCERT (n.d., p.85) defined "a simulation game is an educational activity which combines the features of both of a simulation (a working model of reality and active participation) and a game (rules, cooperation, and competition)." Wilson (1987) defines a simulation game as an activity combining the players, rules, and competition with those imitating reality. Megarry (1989) found that the simulation game is the combination of features of a game (such as players, rules, competition, and cooperation) and simulation (a working model of reality). NCERT (n.d., p.86) argues that the "simulation game is a group-oriented approach to teaching. The role of the learning is active, and the role of the teacher is that of a guide or a facilitator".

Simulation games involve role-playing with self-directed student participants. Under role-play, a participant needs to assume a realistic social role based on a common situation for interaction in the group. According to Megarry (1989), role-play refers to a group of techniques in which the participants are asked to accept a different identity and think their way into someone else's situation and perhaps into their mind. Killen (2009) argues that simulation is a broader term than role-playing. Most simulations are rule-based activities, whereas role-play gives students more freedom to think and act in real life. However, simulation and role-play can be viewed as an attempt to represent reality or a real situation without risks. According to NCERT (n.d., p.86), "simulation game often allocates different roles to the participants by issuing them with role cards bearing the name, age, and occupation of the person they are to represent." There are four features to role-play: (i) role-play requires a profile describing the role behavior to be performed during the game, (ii) a case study or

scenario describing the situation in terms of which the roles are to be played or performed, (iii) a rule, specifying the conditions under which the game is to be played, (iv) to indicate how the winning and losing to be determined at the end of the game.

Literature reveals several advantages of simulation games in the teaching-learning process: (i) simulation games have increased the students' motivation to learn when the motivation is low due to sociocultural factors and irrelevant curriculum that fails to connect the students' real-life experiences. Simulation games make lessons active, interesting, and fascinating. The students are motivated by assigning roles, dividing them into groups, and stating the rules of the activity. Their level of interest increases because the student has a natural urge to play. Students become more eager to find themselves in the activity of simulation games. (ii) Simulation games maximized the students' involvement and participation in the teaching-learning process. This method is helpful and relevant for the average student in remembering concepts and improving their academic achievement. (iii) Simulation games require active participation and involvement of students. As a result, the motivation level of students increases and help to overcome misconception (Vlachopoulos & Makri, 2017). The students learn concepts, terms, facts, conventions, trends, principles, generalizations, assumptions, hypotheses, problems, and processes effectively and meaningfully.

According to NCERT (n.d., p.87), "studies have shown that pupils who were taught economics through simulation games at higher secondary level scored more than those taught through traditional methods of teaching." (iv) Simulation games help students to learn concepts with motivation and engagement. It enhances the retention level of the students. The students who were taught through simulation games had high levels of retention in comparison to those pupils who were taught through the traditional methods of teaching (NCERT, n.d). (v) Simulation games promote cooperation, team spirit, leadership, and respect for colleagues (Wang, Huang, Lin, & Chen, 2016; Ahmad, Fauzi, Hashim, & Zainon, 2013). Through simulation games, students become close to each other and strengthen their social relationships. Activities and group work under simulation games help students learn and share their knowledge and skills. (vi) The literature review also shows students taught through simulation games are more confident in expressing their views and ideas. NCERT (n.d., p.87) argues that the "clarity of concepts, increased interest towards the subject and being exposed to simulations make them more confident in dealing with real-life situations." Students become self-aware after the activity (Vlachopoulos & Makri, 2017) (vii). Simulation games promote cooperative activity and group interaction. Social desirable habits such as tolerance, brotherhood, self-dependence, and thinking for a common cause are fostered and enhanced. (viii) Simulation games also develop various life skills such as personality, decision-making, problem-solving, communication, and negotiations (Sarabia-Cobo, Alconero-Camarero, Lavin-Alconero, & Ibanez-Rementeria, 2016). These life skills are necessary for the holistic development of the students. (ix) Simulation games promote the phase 'learning as a by-product'. Students participate in the activity with excitement and fun and enjoy more opportunities for learning (Ibrahim et al., 2011). But the purpose and objective of the activity under simulation games are to learn concepts, facts, and principles meaningfully.

There are various steps for designing a simulation game-based exercise. According to NCERT (n.d), there are eight steps for designing a simulation game-based exercise:

(1) Formulation of the instructional objective

Formulating instructional objectives is important for designing a simulation game-based exercise. The objective of the concepts to be taught must be written in behavioral form for effective student attainment.

(2) Identification of simulation game

After formulating instructional objectives, an appropriate simulation game exercise should be identified. The concept component helps the teacher identify the most suitable exercise to carry out in the class.

(3) Preparation of simulation game

Teachers and students should prepare and complete their work related to the number of participants in each group, exercise rules, roles, material required, and furniture arrangement.

(4) Assigning roles among participant

The teacher assigns the role to the participants. The activity should go smoothly and be concluded properly. There are two types of roles among participants: (a) key role and (b) supporting role. The key roles have main and greater performance than the supporting roles in the simulation games.

(5) Observer

Students who do not participate in the activity should be assigned a different role, such as writing scores, timekeeping, distribution, and collection of material. The observer student should keep a complete work record- how they worked, what discussions were held, and how roles and duties were assigned. The observer should mark constructive criticism of the work and note some important points for future reference. Observers should learn equally with those students who were involved in the activity.

(6) Organization of simulation game

The whole plan of work is put into action. After the introduction of rules, the simulation game should be played.

(7) Intervention

The teacher should provide constructive feedback on the progress of the activity as and when required. However, teacher intervention should be minimum to have a natural flow of simulation games.

(8) Debriefing

This is the end stage, where there should be general classroom discussions in which the students generalize their outcomes. The teacher should match the simulation game's outcomes and the lesson's objectives. The purpose of the activity should be expressed as not to entertain but to learn concepts, facts, and principles meaningfully.

4. Conclusion

Based on the results and the discussion of the class test, observations, and survey, simulation games are highly effective in teaching economic concepts, figures, hypotheses, and theories. Effective simulation games create a responsive learning environment and class attendance. The data analysis revealed that students have a positive opinion of using simulation games in teaching-learning. The researcher observed that simulation games promote liveliness, interest, and learning for fun. By implementing simulation games, students scored high marks on class tests. Simulation games support assessment as learning. In Bhutanese schools, assessments as learning is rarely used.

4.1 Limitation

The study can be generalized to some extent. Although the sample size was small and the intervention period was limited, a sincere effort has been made to arrive at a fair conclusion. There is a note of caution for all teachers to know that there is no single blueprint or best methodology for an effective teaching-learning process (Cohen, Manion, Morrison & Wyse, 2010; Yadav, 2006). Students come with different backgrounds, needs, and interests, so different teaching methodologies are necessary (NCERT, n.d; Dorji, 2020b; Dorji, 2019).

4.2 Recommendations

The researcher would like to recommend other teachers incorporate at least four simulation games in the teaching-learning process (two before midterm and two after midterm examinations). Before implementing simulation games, the teacher should ensure that students have adequate experience with the reality being represented. It is also important for the teacher to discuss the purpose of the activity with the student. There were a few limitations observed during the implementation of simulation games require more preparation time and energy for teachers, and all micro and macroeconomics concepts cannot be taught through simulation games. The researcher recommends future researchers replicate the same study with an extended intervention period and make a comparison and conclusion. The researcher also recommends Colleges of Education carry out a similar study on simulation games in the teaching-learning process in teacher education.

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Appendix A

The following sample lesson plan outlined in the NCERT (n.d. p.89-91) was implemented in the classroom:

Topic: Monopolistic Competition Market
Class: XII Arts
Time: 55 Minutes

Components of monopolistic competition market

- Many firms
- Closely related but differentiated product
- Free entry and exit of firms
- Selling costs

Instructional objectives

After going through this activity student should be able to:

- state the meaning of monopolistic competition market.
- list the features of monopolistic competition market.
- explain the features of monopolistic competition market.
- describe the terms "Product Differentiation" and "Selling Costs".
- write the rationale of a firm in differentiating its product.

Rules

- Divide the whole class into five equal groups.
- There would be 5 students in each group.
- There would be four firms which will be selling their product "Toothpaste".
- One group shall be consumers.

Procedure

- Three students of the first four groups will act as a seller of different firms which are selling their product toothpaste. Remaining two students of each group will perform promotional activities like advertisement on newspaper, T.V. and Radio, Free Sampling, etc. to sell their products. Their description is given below:

Table 1: Role of students

Group	Role of Firm	Number of students	Student engaged in promotional activities	Total
1	Firm A Colgate	03	02	05
2	Firm B Pepsodent	03	02	05
3	Firm C Close up	03	02	05
4	Firm D Dabur	03	02	05
	Total	12	08	20

It is clear from the above table that there are five students in each group engaged in performing roles of firms and engaged in promotional activities.

- The fifth group will act as consumers who wish to purchase a product "toothpaste" and for this, they visit and interact with the members of each firm and observe all the promotional activities. The group

of consumers will get information related to price, quantity, quality, brand name, colours, type of service etc. about the products.

Debriefing

After the activity has been conducted, the groups will share their experiences and explain the purpose of the activity. At this stage, the teacher needs to match the outcomes of the activity with the objectives of the lesson and describe that there are a number of firms selling a similar product and thus, each firm supply a certain percentage of the total supply of the product. Competition prevails in the market because there are many firms. Products of different firms are close substitutes of one another. They can be differentiated from each other based on a brand name, colours, shape, quality, and expenditure incurred in promoting sales of a firm etc. Finally, the meaning of monopolistic competition is derived with the help of students as it refers to a market situation in which there are different firms selling closely related but differentiated products.

Homework

Q1. Give four examples of any five consumer goods industries where product differentiation is prevalent.

Q2. Can a seller in monopolistic competition market influence price? Give one reason.

Q3. Explain any four features of monopolistic competition market.